COSMOS Appliance
User Guide

COSMOS Appliance User Guide

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Introduction

Thank you for purchasing a COSMOS (Celestix Open Secure Modular Operating System) Appliance product. The Celestix Open Secured Modular Operating System or COSMOS is an appliance OS that runs on appliances from Celestix. COSMOS has three main features:

- Open platform
- Secure by design
- Modular architecture

COSMOS is an open platform for application developers to run their application on. It is designed to be modular so that an application can hook into the web-based user interface, the LCD user interface and the backup system etc.

Although it is an open platform, security is not compromised.

Configuration Using The Web Browser

COSMOS can be configured and maintained in two ways:

- Using a web browser from the network or the Internet.
- Using a command line interface, either directly using a serial console connected from the front panel or using SSH from the network or Internet.

This section describes the configuration of COSMOS using a web browser. The command line interface using a serial console or SSH is discussed in the section Remote Login Using Secure Shell Services on page 95.

Launching The Web Browser

Using a browser on your client PC, go to the URL https://x.x.x.x:10000 where x.x.x.x is the IP address of COSMOS that you have set up earlier. For example, if you have configured the IP address as “192.168.6.52”, the URL should be https://192.168.6.52:10000.

The first time that you enter the COSMOS web user interface, you need to set up the system. You will see the following screen.

celestix
COSMOSManager
home
help
New Installation
System Preparation
Administrator
Date / Time
Hostname
SSL Certificate
Package selection
Summary
Restore System
System Update
COSMOS Version 2.1.01Build000225 - myhost.example.com
System: COSMOS_2.1.01Build000225
Welcome!
Welcome to the Celestix COSMOS Manager®.
Celestix COSMOS Manager is an SSL-secured, web-based element management interface to Celestix One Security Platforms. Configuration features in COSMOS include networking, routing, system, and package management for maintenance of the operating system and system features. Backup/restore of OS, application and system configurations can also be administered via COSMOS' hyperlinked web pages with data fields for entry and display of specific file information.
On the left is the System Configuration menu, which contains links to the major functions of the COSMOS Manager. Click Help for more information.
Click here for Documentation

Figure 1 COSMOS setup

There are three options to select during this phase of set up.

- **System Preparation**. This is used to set up COSMOS for a new installation or deployment. This will be discussed in detail in the following section. The following steps are performed.
  - Set up web user interface administrator ID and password.
  - Set up date, time and time zone.
  - Set up the host name.
  - Generate SSL certificate for web user interface.
  - Select package to install.
  - Set up selected package, if any.
- **Restore System**. Use this option to restore your COSMOS Appliance if you have a previous backup of the system.
- **Update System**. Use this option to install update patches into the COSMOS Appliance.

System Preparation

Step 1. Set Up User Name And Password

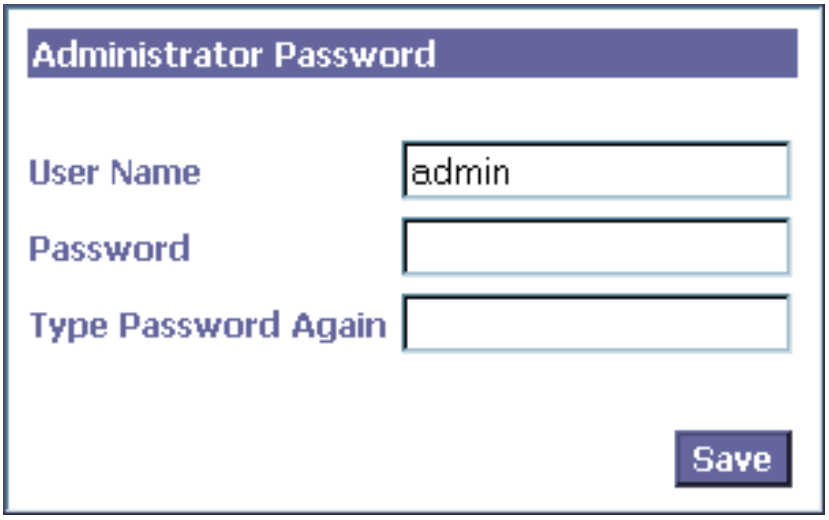


Figure 2 Setting up admin username and password

The user ID and password of the administrator for the web-browser user interface is configured here. Enter the user ID of the administrator in the **User Name** field. Enter the administrator password in the **Password** field and again in the **Verify Password** field. The two passwords must match.

Click on the **Save** button to proceed to the next step.

Step 2. Set Up Date, Time And Time Zone

In this step, the system data, time and time zone are set up. This is necessary for proper operation of the system.

Select a time zone from the **Time Zone** selection list. Set the date and time in the **Date** and **Time** selection boxes.

Click on the **Save** button to proceed to the next step.

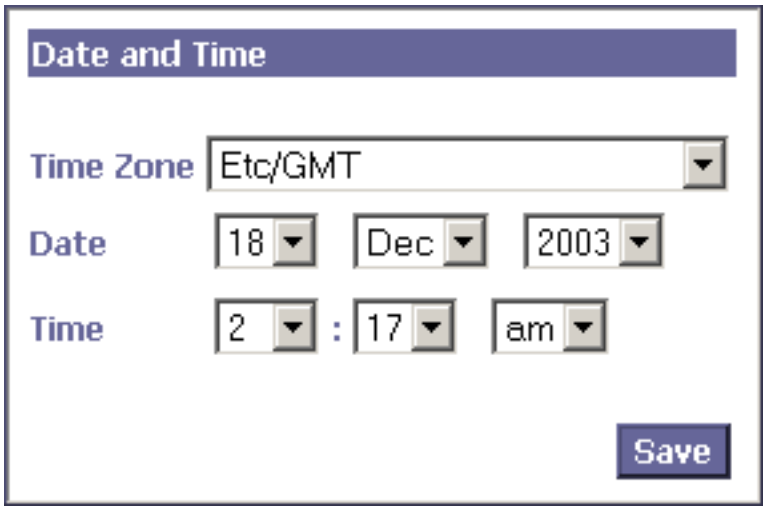


Figure 3 Configuring time zone, date and time

NOTE. Although COSMOS has the NTP client feature, it is not applicable during this phase. This is because the Internet and DNS resolution is not available at this stage.

Step 3. Host Name and Domain Name

Set up the system host name and domain name here.

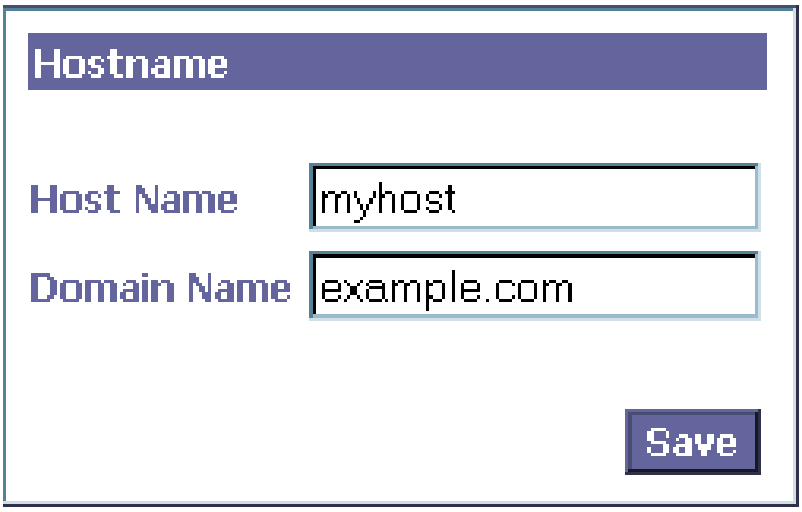


Figure 4 Host Name and Domain Name

Enter the host name in the **Host Name** field and the system domain name in the **Domain Name** field.

Click on the **Save** button to proceed to the next step.

Step 4. Generate Self-Signed Certificate

The web user interface uses 128-bit SSL transactions to secure the communication between the administrator and the system. A default certificate is used for the initial configuration. This step regenerates the certificate with your parameters.

Enter the 2-letter country code in the **Country** field.

Enter the organization and the organization unit in the **Organization** and **Organization Unit** fields respectively.

By default, the **Hostname** field is filled with the current system hostname. Preferably, change this to an Internet resolvable hostname.

Enter the email address of the administrator in the **Email** field.

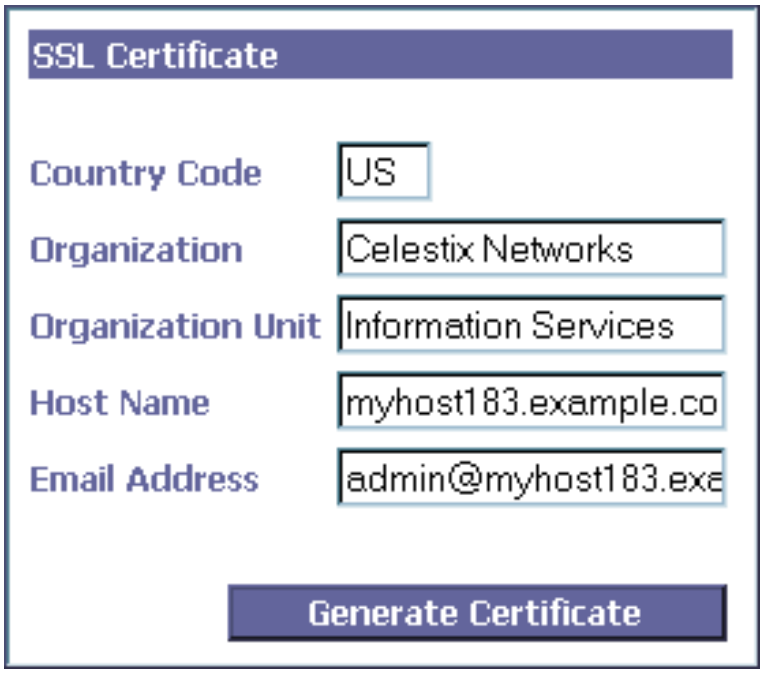


Figure 5 Generating SSL Certificate

Click on the **Generate Certificate** button to proceed to the next step. When the server has completed the initial system preparation, the web user interface will restart. Your browser will automatically restart in 5 seconds. If not, click on the link provided in the web page.

Step 5. Select Package To Install

In this step, the list of packages that can be installed by the wizard is shown. Select one of the package in the list to install. An example list is shown below.

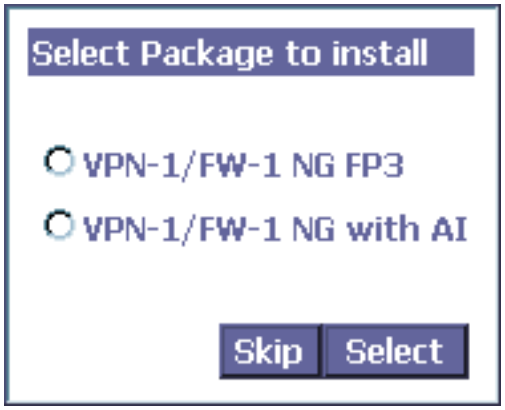


Figure 6 Package selection

In the above list, select either one of the package and click on the **Select** button to bring up more package related set up items on the left hand menu. The related set up items are described in the user guide for the respective package.

Click on the **Skip** button to skip any package installation.

Final Step. Summary

At the final step, a summary of your set up will be displayed before being implemented. An example is shown below.

Setup summary
Admin username is set to 'admin'
Timezone is set to 'Singapore'.
Hostname is set to 'myhost.example.com'
A new SSL certificate was generated for 'myhost.example.com'.
Restart web server
Figure 7 Summary of action

In this example, click on the **Restart web server** button to implement the set up and restart the web server.

Log In To COSMOS Web User Interface

Using a browser on your client PC, go to the URL https://x.x.x.x:10000 where x.x.x.x is the IP address of the COSMOS Appliance that you have set up earlier. For example, if you have configured the IP address as “192.168.6.52”, the URL should be https://192.168.6.52:10000.

Note: Only one user should login and use the Web UI at a time.

Log In To The Web User Interface

When using the Web User Interface for the first time, you will be presented with a login screen.

Figure 8 COSMOS log on

Note: The browser may issue a warning about "invalid certificate" because the new certificate is different from the initial certificate generated during the wizard setup.

Enter the username and password used for **Step 1** of the initial configuration to log in to the Web User Interface. You will now be able to use the Web User Interface to configure the COSMOS Appliance.

Note: If you leave your browser idle for more than 5 minutes on the Web User Interface, your session will become invalid. The next link you click will bring you back to the login screen. In order to use the Web User Interface again, login with your username and password. This is now configurable in the System Settings -> Web UI -> Timeout. The maximum time out is configurable up to one hour.

Navigating The Web User Interface

Configuring the COSMOS Appliance using the Web User Interface is simple and intuitive. The page shown below is the first page you will see after you log in to the Web User Interface.

celestix
COSMOSManager
Log out
home
help
Logged on as: admin
Expand All
Collapse All
System Configuration
Network Configuration
Package Manager
Boot Manager
IPv6 Configuration
Services
System Settings
Network Utilities
System Information
SNMPD Setup
Expand All
Collapse All
COSMOS Version 2.1.01Build000225 - myhost.example.com
System: COSMOS_2.1.01Build000225
Welcome!
Welcome to the Celestix COSMOS Manager®.
Celestix COSMOS Manager is an SSL-secured, web-based element management interface to Celestix One Security Platforms. Configuration features in COSMOS include networking, routing, system, and package management for maintenance of the operating system and system features. Backup/restore of OS, application and system configurations can also be administered via COSMOS' hyperlinked web pages with data fields for entry and display of specific file information.
On the left is the System Configuration menu, which contains links to the major functions of the COSMOS Manager. Click Help for more information.
Click here for Documentation
Figure 9 Web User Interface main screen

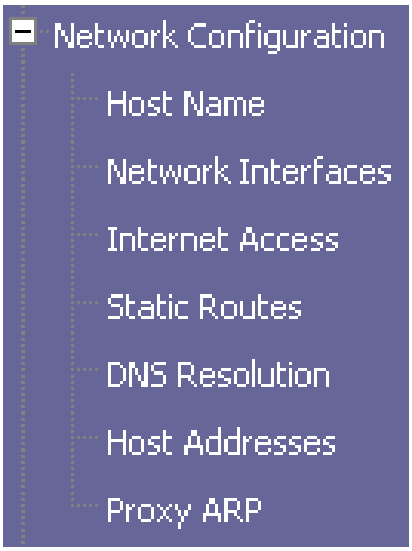


Figure 10 Configuration item selection

Configuration items are available on the left-hand menu frame. Clicking on an item brings up a web page on the main right-hand frame, where status and configuration options are displayed. For example, to

configure the hostname of the server, click on the **Host Name** menu item.

The **Host Name** configuration page will appear on the right-hand frame, displaying the current host and domain names. You are now able to configure the host name and domain names.

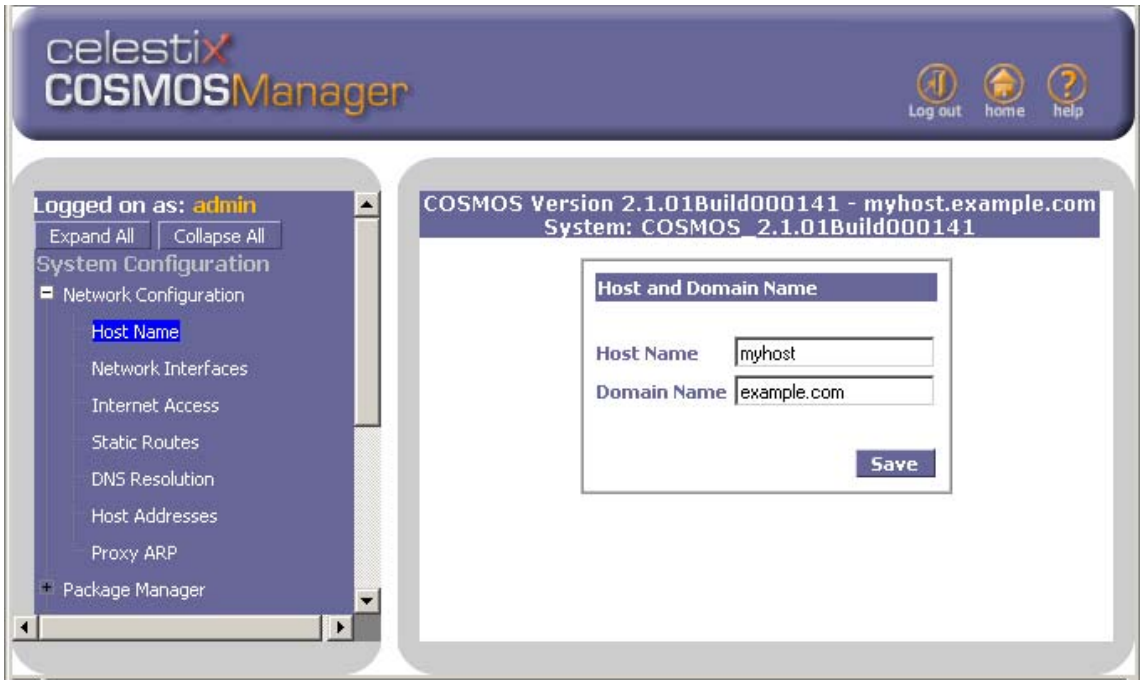


Figure 11 Editing host and domain name

Network Configuration

The network configuration menu is used to set up the network configuration for the COSMOS Appliance. In this set of menus, the administrator can set up the system host and domain name. Up to five network interfaces can be configured here.

Network routing to other networks, hosts or gateways can be configured from this menu. For the system to operate properly, its DNS resolution needs to be set up with your DNS servers. Host name to IP address mappings can also be set up here if there are no DNS servers available or if DNS lookup is too slow.

For ARP proxy set up, you can add ARP entries into the ARP cache in the kernel.

Host Name And Domain Name

To configure the host name and domain name of the appliance, select the **Host Name** link under the **Network Configuration** menu on the left-hand menu. You will get the following screen.

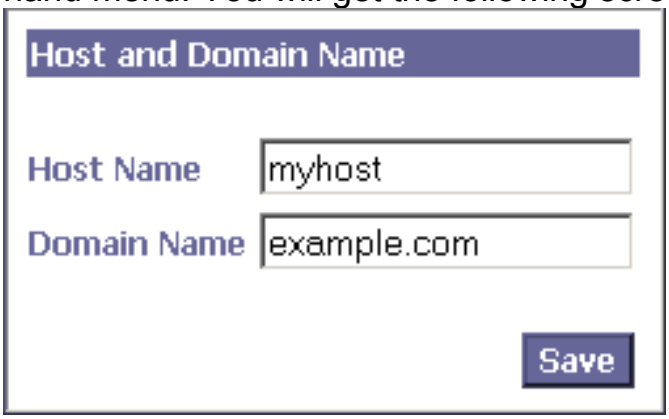


Figure 12 Host and Domain Name Configuration

Enter the canonical hostname (without domain name) in the Host Name text box. Enter the domain name in the Domain Name text box. Click on the **Save** button.

The appliance will reconfigure itself to use the new host name and domain name.

Network Interfaces

To configure the network interfaces of the appliance, select the Network Interfaces link under the Network Configuration menu as shown below.

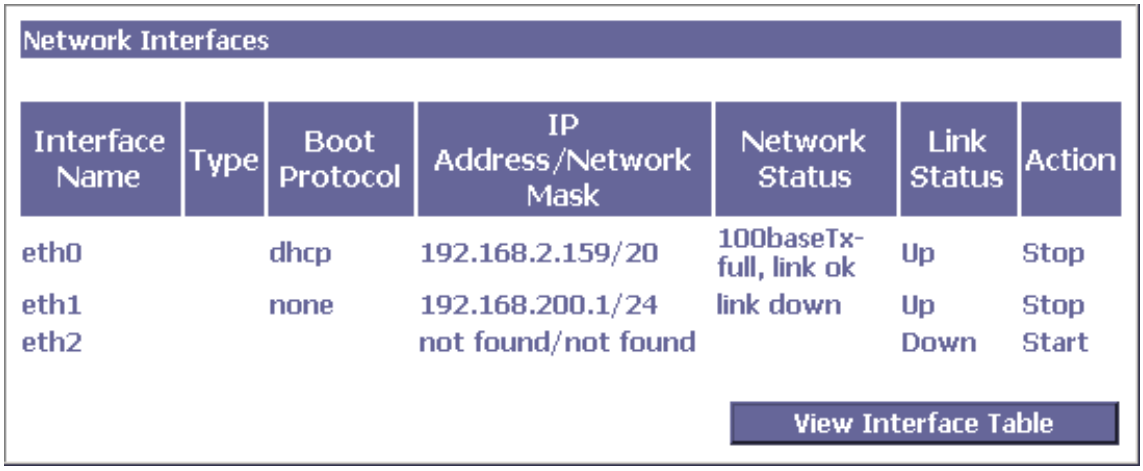


Figure 13 Network Interfaces configuration

To configure any of the network interfaces, click on the network interface name that you wish to edit.

For example, if you want to configure the eth0 interface, click on eth0. The following screen will be shown.

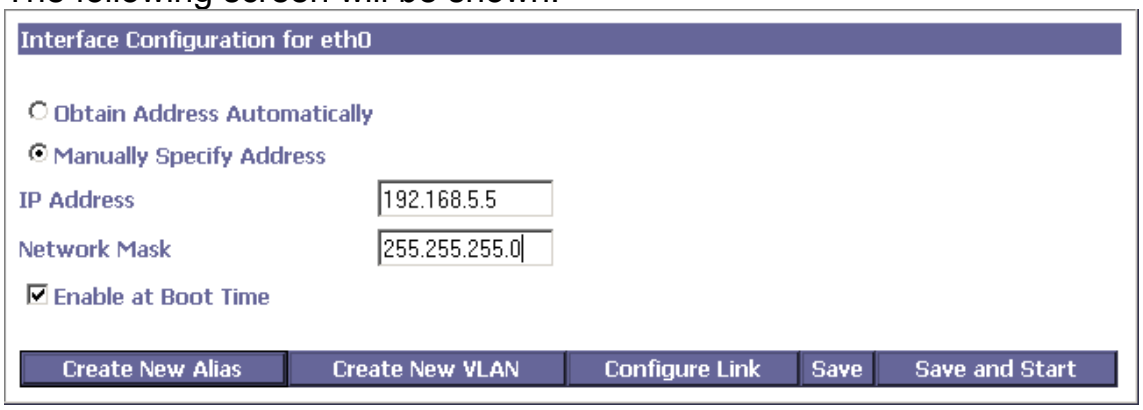


Figure 14 Configuring a network interface.

Select **Obtain Address Automatically** if you want to obtain an address using DHCP.

If you want to use static IP address, then fill in the IP Address and Network Mask in the **IP Address** field and **Network Mask** field

respectively. Make sure you have selected the **Manually Specify Address** radio button.

Check the **Enable at Boot Time** check box if you want this interface to be started up at boot time.

Click on the **Save Configuration** button to save the settings you have entered. To activate the changes at the same time, click on the **Save and Start** button instead.

Click on the **Configure Link** button to configure the media set up on the network device. This is described further down this section.

To set up aliased interfaces, you click on the **Create New Alias** button. You will see the following screen.

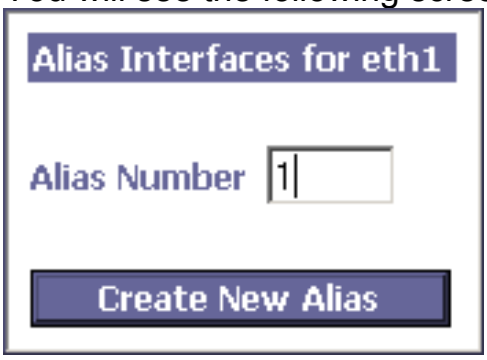
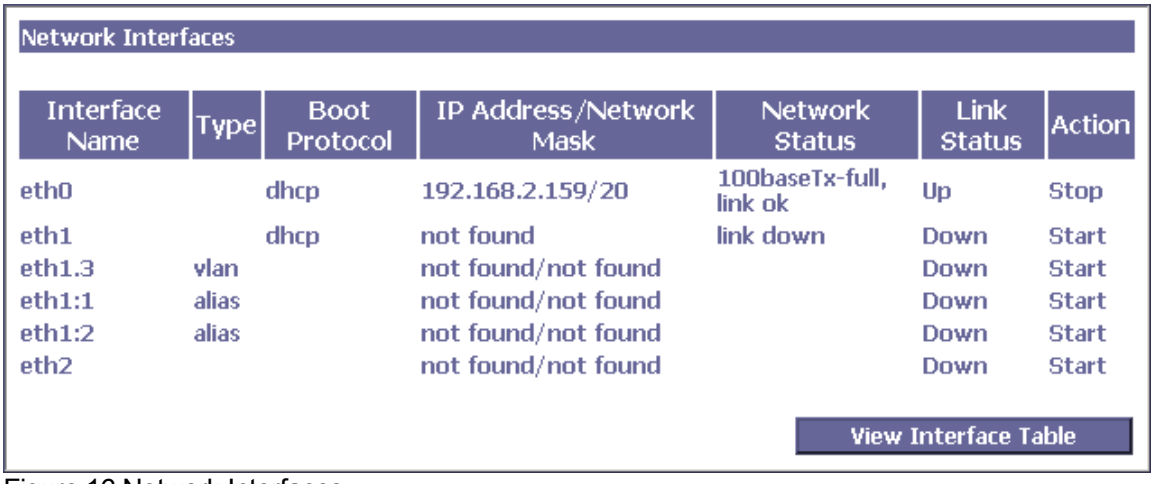


Figure 15 Create Aliased Interfaces.

First step is to create an Alias interface number for a physical interface.


Network Interfaces
Interface Name
Type
Boot Protocol
IP Address/Network Mask
Network Status
Link Status
Action
eth0 dhcp 192.168.2.159/20 100baseTx-full, link ok Up Stop
eth1 dhcp not found link down Down Start
eth1.3 vlan not found/not found Down Start
eth1:1 alias not found/not found Down Start
eth1:2 alias not found/not found Down Start
eth2 not found/not found Down Start
View Interface Table
Figure 16 Network Interfaces

As you can see, there is a new aliased interface with a sub number 1 in the name. You can now proceed normally to click on the interface name to setup a new IP for that interface.

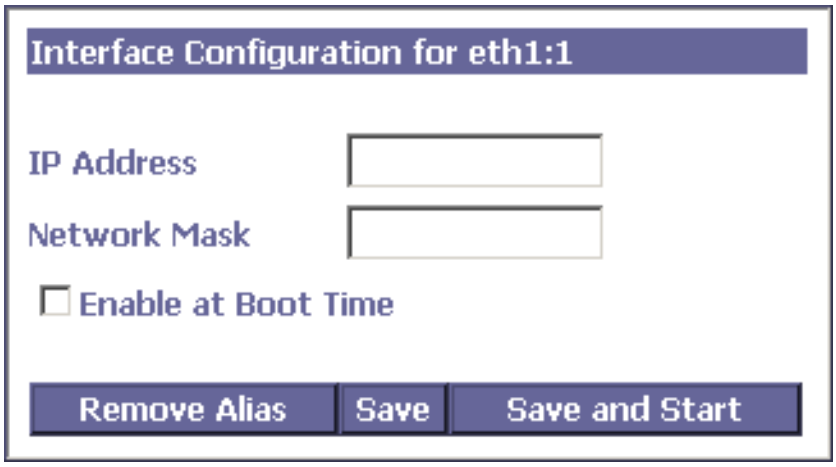


Figure 17 Configure An Aliased Interface

One point to note is that there is no DHCP option for aliased interface. Fill in the fields in the same way as the primary interface configuration screen above.

To configure the link media of the network device, click on the **Configure Link** button. You will get the following screen.

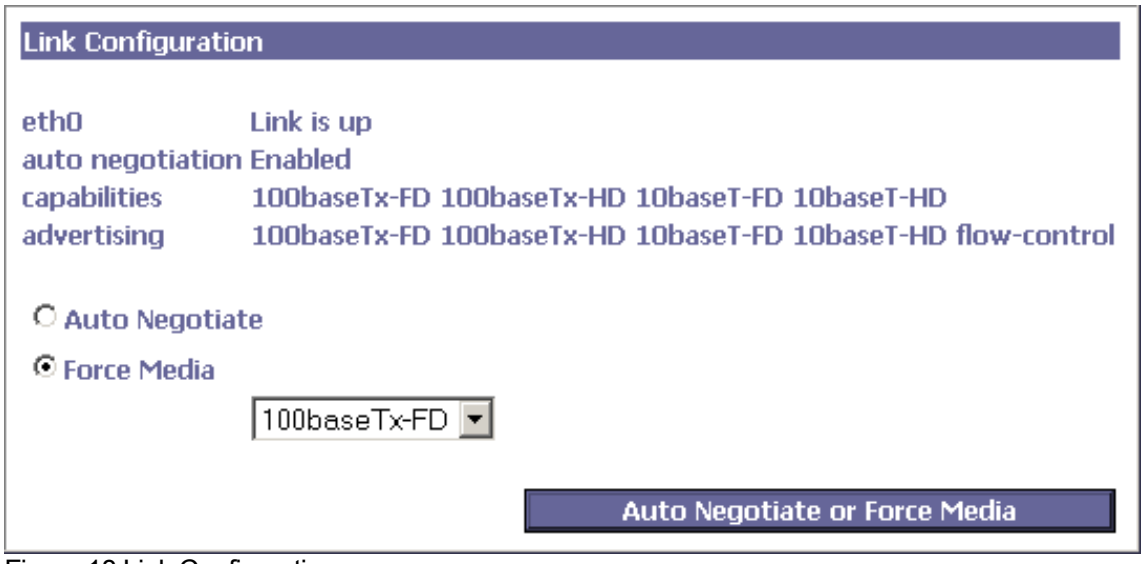


Figure 18 Link Configuration

To set the media type to auto-negotiate, select the **Auto Negotiate** radio button and select one or more media types to automatically negotiate.

To force the media type to one of four types, select the **Force Media** radio button and select one of the four media types to negotiate.

Note. The suffix after the media type denotes the duplexing capability. FD means Full-Duplex and HD means Half-Duplex. Warning. Depends on what action you have selected, the link will be adjusted accordingly. However, if the link does not come up after 5 seconds due to incompatible media types auto-negotiated or forced, the link will be reset. This will prevent you from losing connections.

Click on the **Auto Negotiate or Force Media** button to perform your respective action.

VLAN (Virtual LAN) Setup

One new feature is to enable setting up of an 802.1q Virtual LAN interface on the system. Virtual LAN allows you to use the same interface to create multiple networks that are invisible to each other on the same system. To create a new virtual LAN, first click on Create Virtual LAN.

First step is to create a Virtual LAN interface number for a physical interface.

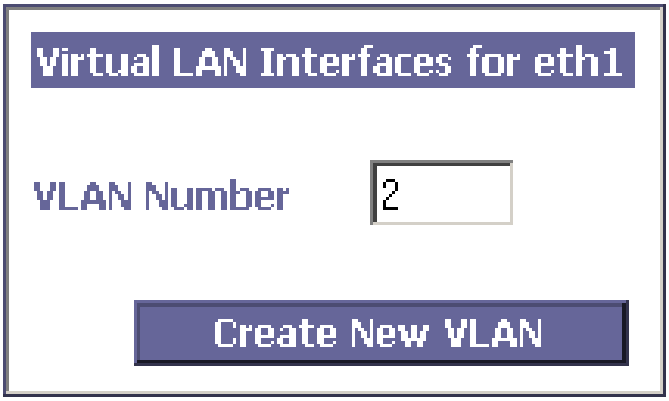


Figure 19 Virtual LAN Interface

Your network interface will now look like.

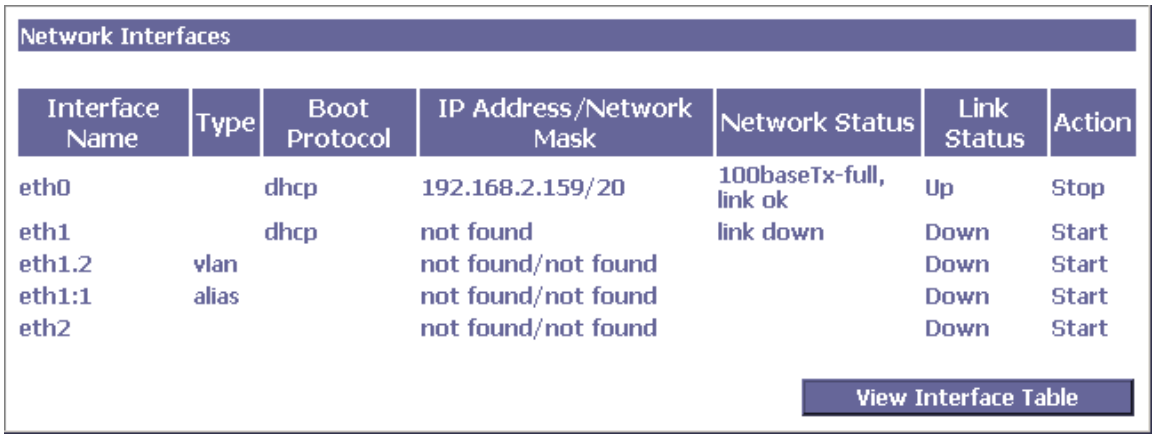


Figure 20 Network Interfaces

As you can see, there is a new VLAN interface with a sub number 2 in the name. You can now proceed normally to click on the interface name to setup a new IP for that interface. One point to note is that the VLAN interface as well as an alias interfaces can only be working if the primary interface for it is also active.

Internet Access

The internet access configuration menu is used to set up an Internet connection via PPPoE for the COSMOS Appliance. At the moment only one PPPoE connection can be created.

Internet Access List

This list (see Figure 21) shows the configured connections. A new connection can be created by clicking on the **Add PPPoE** button.

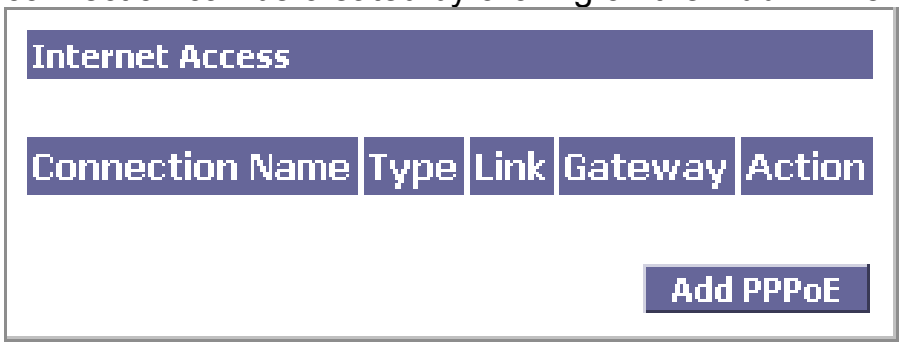


Figure 21 Internet Access Information

After setting up an Internet connection, the **Add PPPoE** will not be shown, instead the screen will display the Internet connection status and information (see Figure 22):

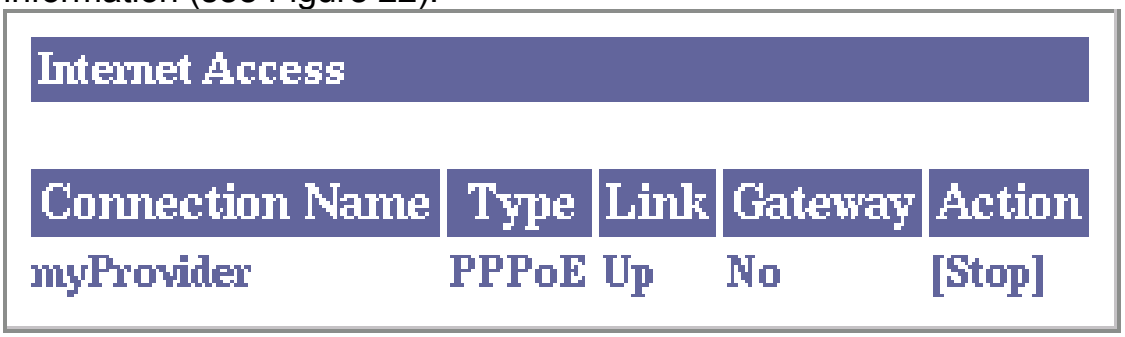


Figure 22 Internet Connection Information (Online)

Figure 23 Internet Connection Information (Offline)

Connection Name: the name of the connection, useable e.g. for the dynamic objects in the Check Point Firewall configuration.
Type: present there is only PPPoE possible
Link: shows 'up' if there is an active connection, otherwise 'down'
Gateway: displays 'yes' if you use this connection as default gateway
Action: here you can find links for stopping, starting or debugging

- **[stop]**
  (only if line is up) shutting down the connection
- **[start]**
  (only if line is down) bring line up
- **[debug]**
  (only if line is down) try to bring up the line, shutting down the line if succeed and display log messages about the test

Clicking on the **Connection Name** opens the configuration dialog.

PPPoE Configuration

The PPPoE configuration dialog (see Figure 24) is used to set up the internet access configuration for the COSMOS Appliance. The

connection name will be used to identificate this configuration. After creating of a connection this name is not modifiable. Next you must choose the ethernet port using for the PPPoE connection. The values for the fields "User Identification" and "Password" are given to you by your PPPoE provider.

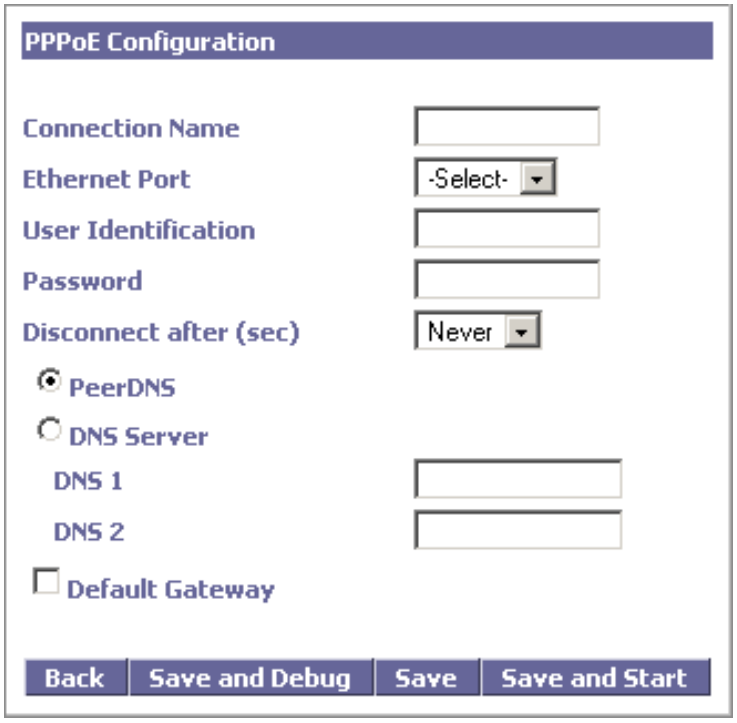


Figure 24 PPPoE Configuration

You can choose between a connection on demand or if the line should be up always. Select "Peer DNS" to will cause the appliance to prompt your provider for DNS server configuration or type in your preferred DNS servers. If you select "Default Gateway" the connection will be become the gateway to the internet and will be bring up at boot time.

At the botton of the dialog you will find:

Back: return to the internet access list without any changes
Remove: (only if reconfiguration a connection) shutting down the connection and delete the configuration
Save and Debug: save the configuration, try to connect, shutting down the line if succeed and display log messages
Save: save configuration and return to internet access list
Save and Start: save configuration, bring up the line and return to internet access list

Static Routes

This menu item sets up the routes to hosts and networks. The default route or gateway is also configured here.

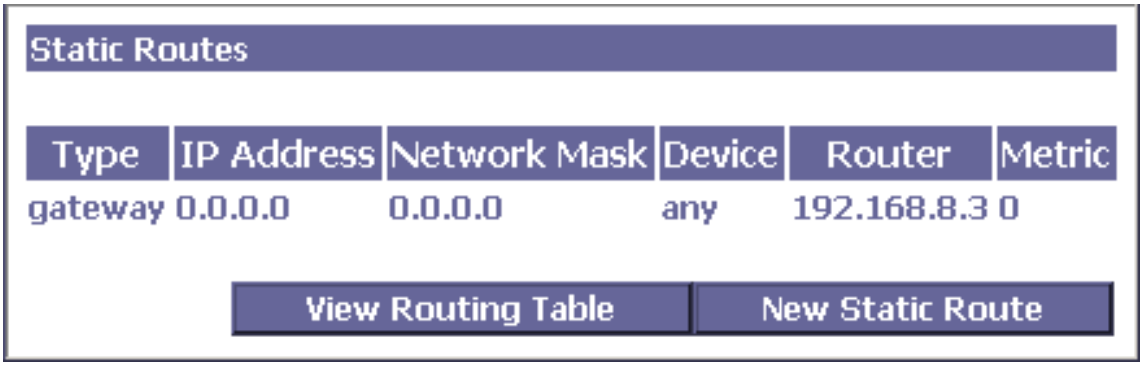


Figure 25 System Routing Table

Click on the **View Routing Table** button to display the current route table of the appliance as shown below.

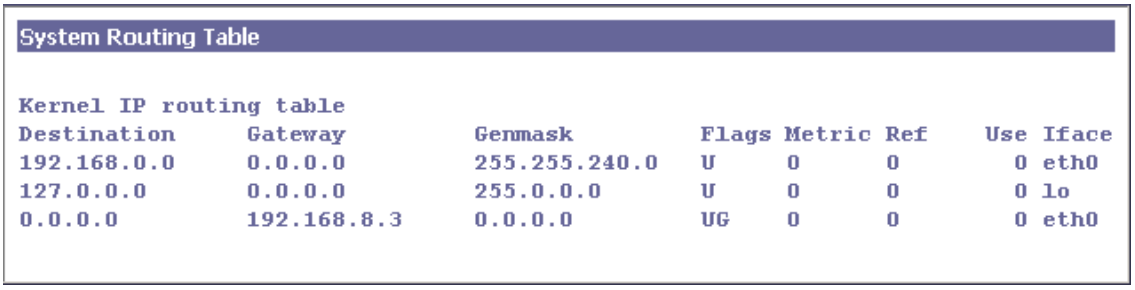

System Routing Table
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
192.168.0.0 0.0.0.0 255.255.240.0 U 0 0 0 eth0
127.0.0.0 0.0.0.0 255.0.0.0 U 0 0 0 lo
0.0.0.0 192.168.8.3 0.0.0.0 UG 0 0 0 eth0

Figure 26 System Routing Table

Click on the **New Static Route** button to create a new static route or click on the actual route displayed on the table to edit the respective route. The screen below will be displayed.

There are four types of routes:

- *network* – set up the route to a network as defined in the **Network** field and **Network Mask** field.
- *gateway* – set up the default route or gateway. Both the **Network** field and the **Network Mask** field are not used, **Device** field are set to **any**, and only one gateway can be set up.
- *host* – set up the route to a host as defined by the **Network** field. The **Network Mask** field is not used.
- *Route Metric* – Specify the cost of the route.

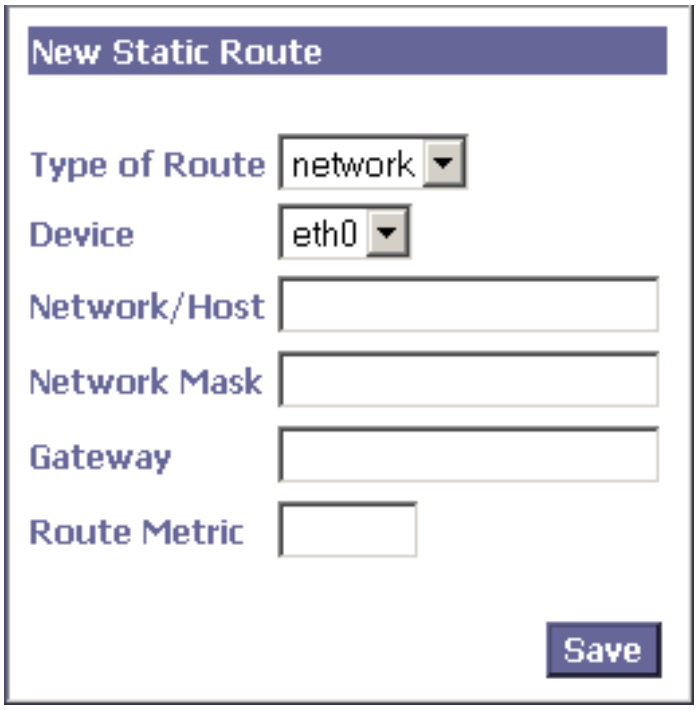


Figure 27 Create New / Modify Existing Route

Fill in the IP address of the route in the **Gateway** field.

To verify that your route has been successfully entered into the system routing table, click on the **View Routing Table** button to display the system route table.

DNS Resolution

In order for the COSMOS Appliance to resolve hostnames to IP address, its DNS resolver needs to be set up.

In the **Search List** text box, fill in the domain names you are using in your local area network. Fill in up to three dotted decimal IP address of DNS servers to resolve in the **DNS Server** fields.

Click on the **Save** button to save the changes in your system.

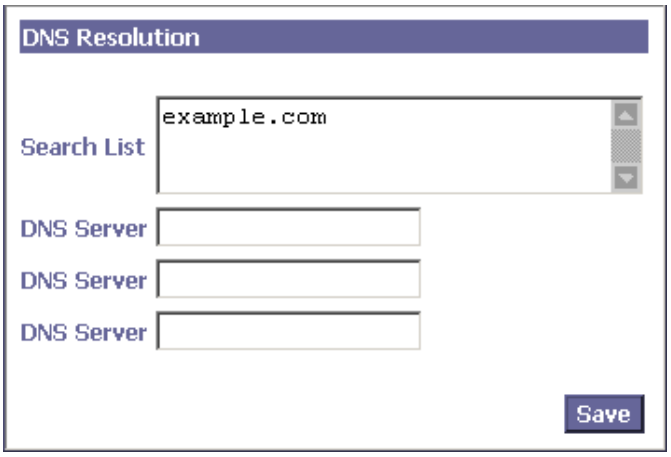


Figure 28 DNS Resolution.

Host Addresses

This menu item configures the static table lookup for host names. It associates IP Addresses with Host Names.

Click on the **Create New Host** button to add a new entry. To modify an existing entry, click on the respective line.

Figure 29 Host Addresses

Fill in the dotted decimal IP address on the **IP Address** field. Fill in one or more host names that corresponds to this IP address in the **Host Name** text box. Separate each host name with a new line.

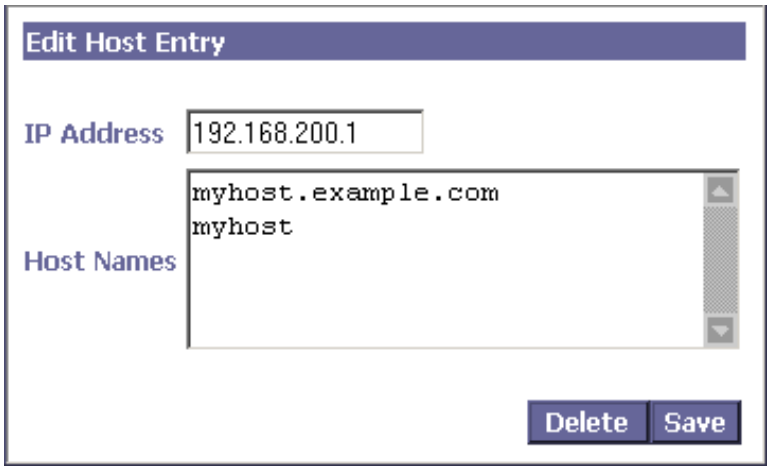


Figure 30 Edit Host Entry.

ARP Table

This displays the Proxy ARP Table and allows the configuration of Proxy ARP entries into the table. The ARP table shows a summary of the entries in the ARP cache of the kernel. Incomplete entries will not be shown.

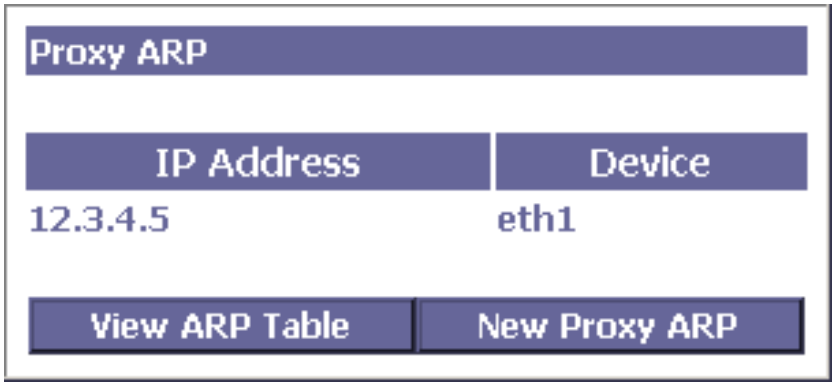


Figure 31 Proxy ARP Table

Click on the **View ARP Table** button to display the latest information on the ARP cache in the kernel.

To add a new ARP entry, click on the **New Proxy ARP** button. To edit or delete an existing ARP entry, click on its IP address.

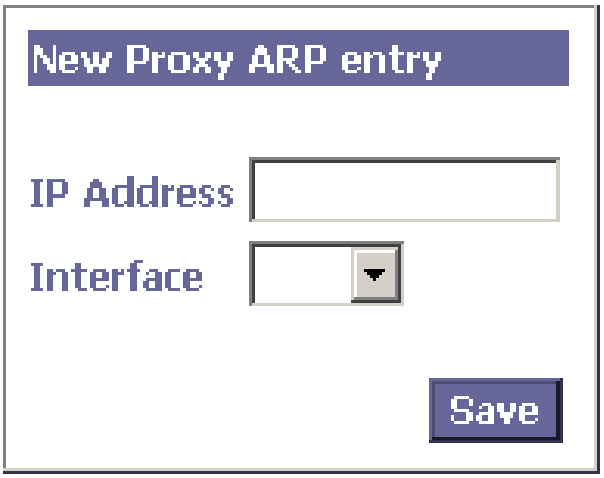


Figure 32 Configure Proxy ARP

Fill in the IP Address of the ARP entry in the **IP Address** field.

From the **Interface** selection box, select the Interface you want the ARP entry to proxy for.

Click on the **Save** button to save this entry.

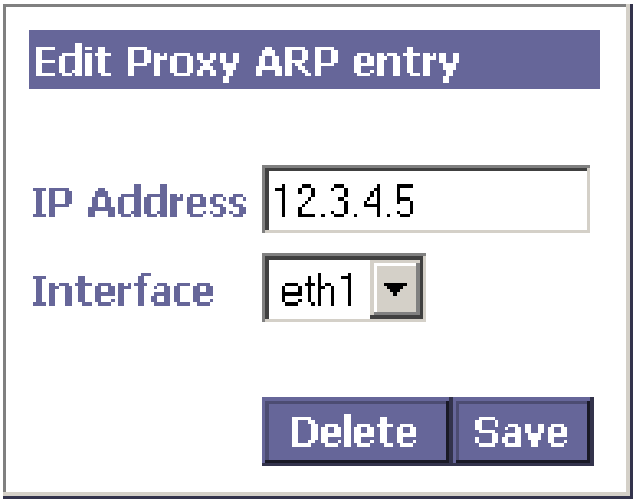


Figure 33 Edit or Delete Proxy ARP

Click on the **Delete** button to remove this entry. If you change the setting, click on the **Save** button to save the changes.

Package Manager

The Package manager provides a means to install packages easily and conveniently. The concept of a package versus a normal package is simple. A package is a logical group of associated packages predefined to install in the correct order. This simplifies the install process a great deal for the administrator since it removes the requirement of knowing the sequence of packages that is needed to ensure that the package is correctly installed.

Figure 34 Package Manager

Package List

The picture below shows the Package List, it gives intelligible names to groups of packages for the user's convenience. If you click on details you'll see a screen with more details about the package and which packages that will be installed. If you click on the Install option you will be shown the same information but with Install now option.

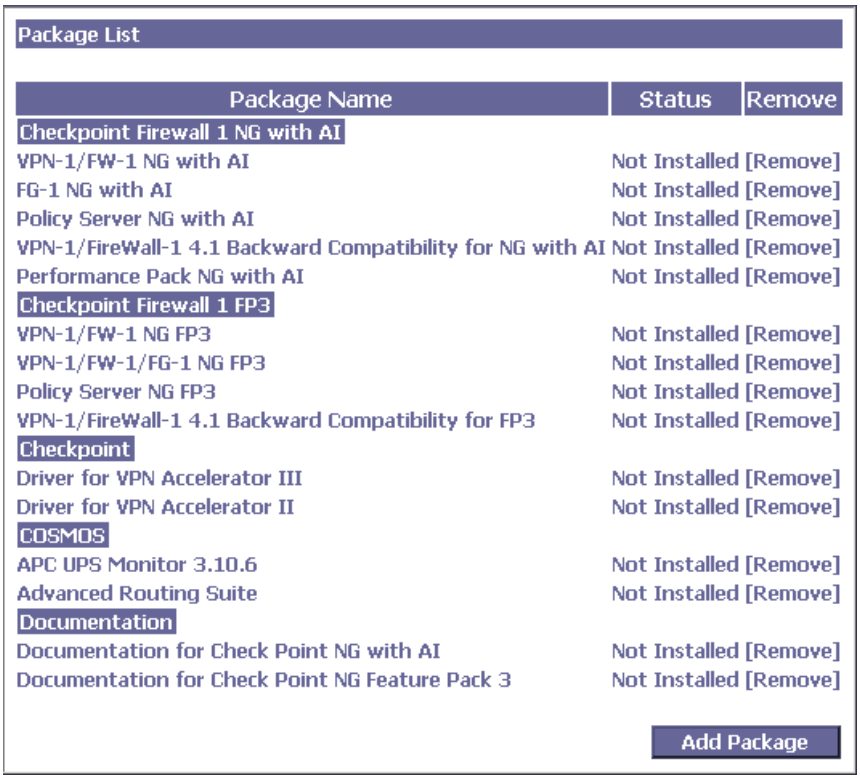


Figure 35 Package List

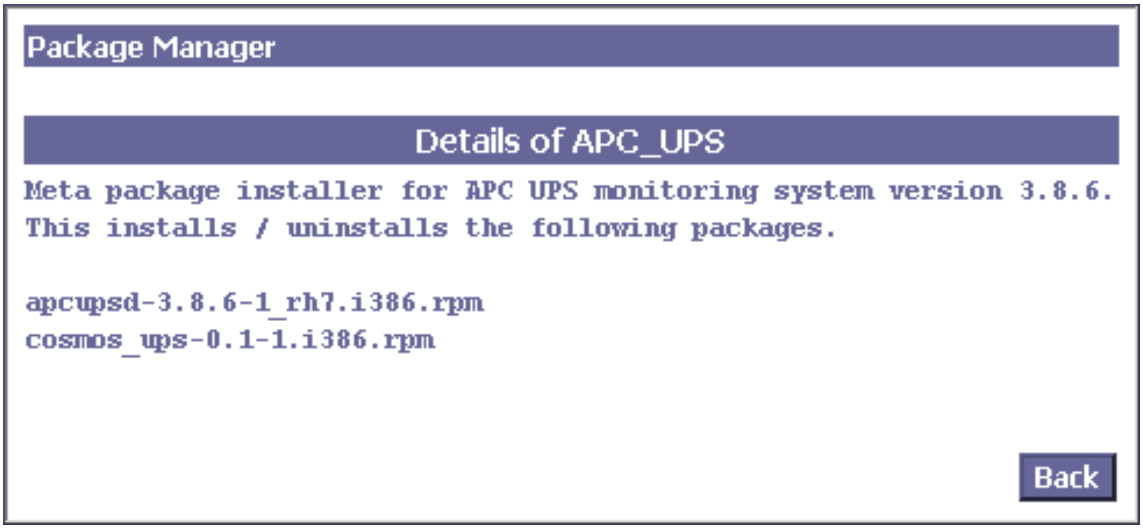


Figure 36 Details of package

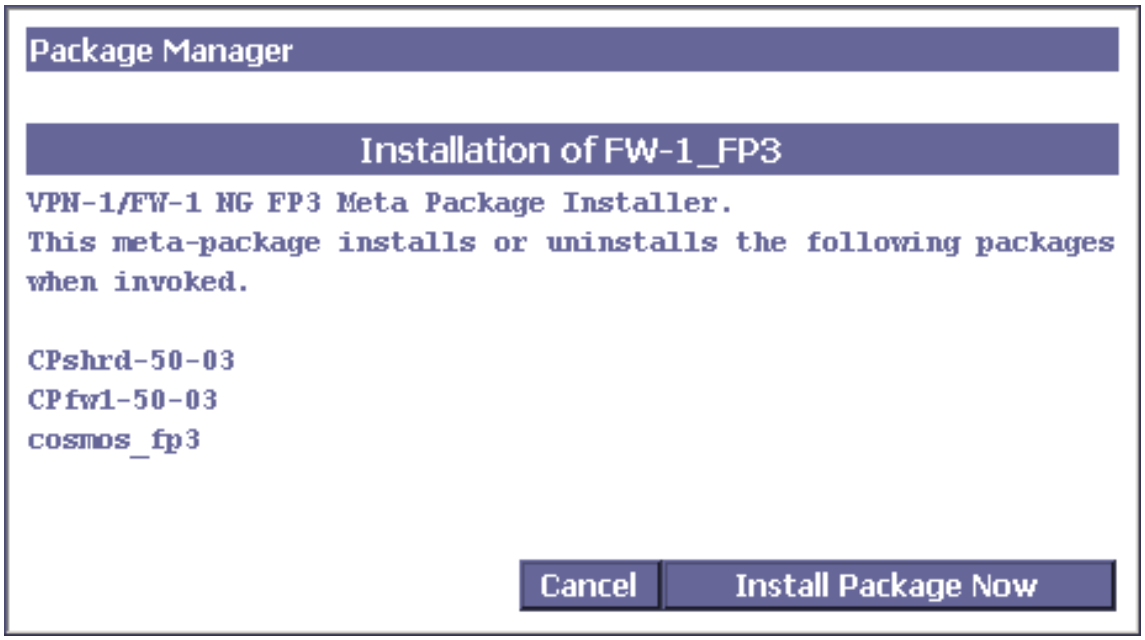
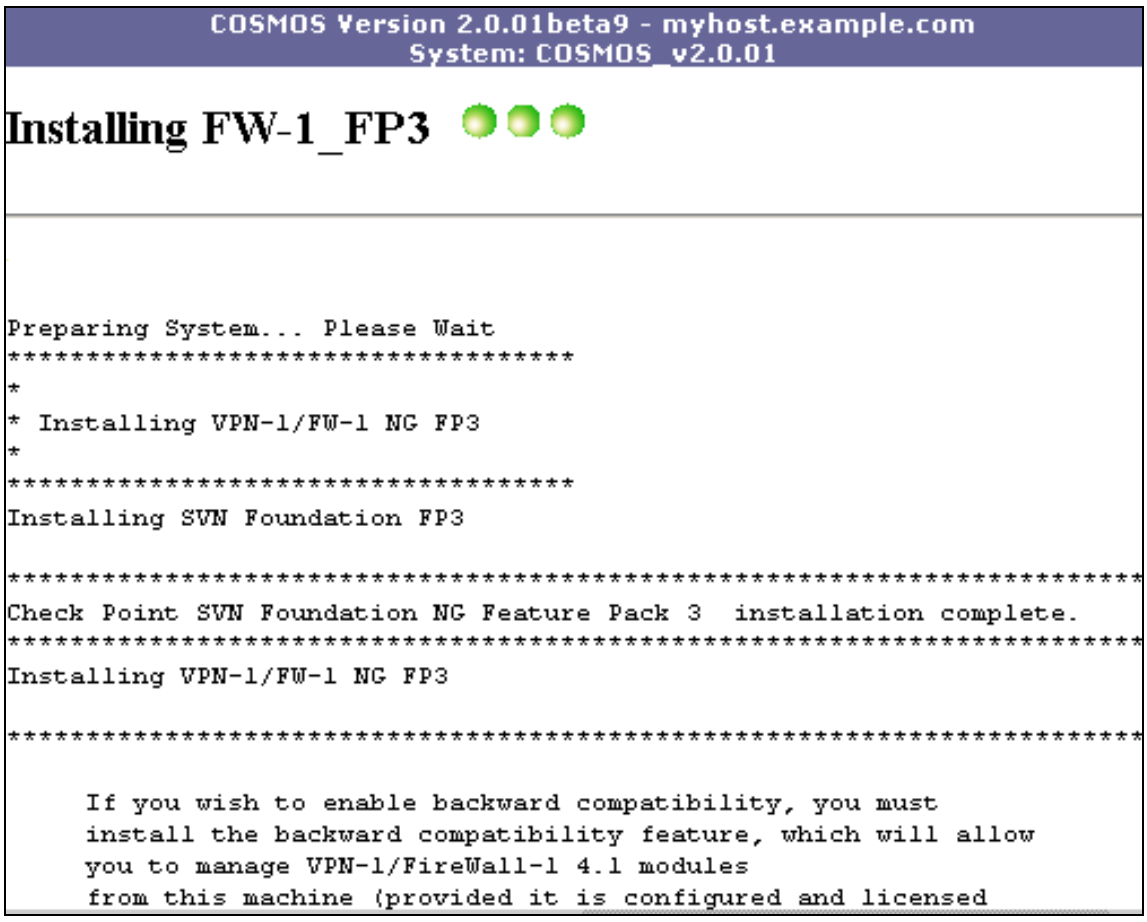


Figure 37 Installation of packages


COSMOS Version 2.0.01beta9 - myhost.example.com
System: COSMOS_v2.0.01
Installing FW-1_FP3
Preparing System... Please Wait
****
*
* Installing VPN-1/FW-1 NG FP3
*
****
Installing SVN Foundation FP3
Check Point SVN Foundation NG Feature Pack 3 installation complete.
Installing VPN-1/FW-1 NG FP3
If you wish to enable backward compatibility, you must
install the backward compatibility feature, which will allow
you to manage VPN-1/FireWall-1 4.1 modules
from this machine (provided it is configured and licensed
Figure 38 Process of installation

The figure above shows an example of the installation process. Please wait until the Installation Complete is shown before continuing. If you are asked to reboot, please do so, since this is critical to complete the installation process.

Installation of FW-1_FP3 Passed
The user interface has been updated. Click on the Continue button to refresh your browser. Or click on the Reload button of your browser.
View Log
Continue
Figure 39 After package installation is complete

Adding A Package

Clicking on Add Package gives you a new screen. You can either choose to download from a website or upload a file from your desktop. The package will first be checked to see if it was digitally signed by Celestix and is intact. This is to prevent a tempered package from being installed on your system.

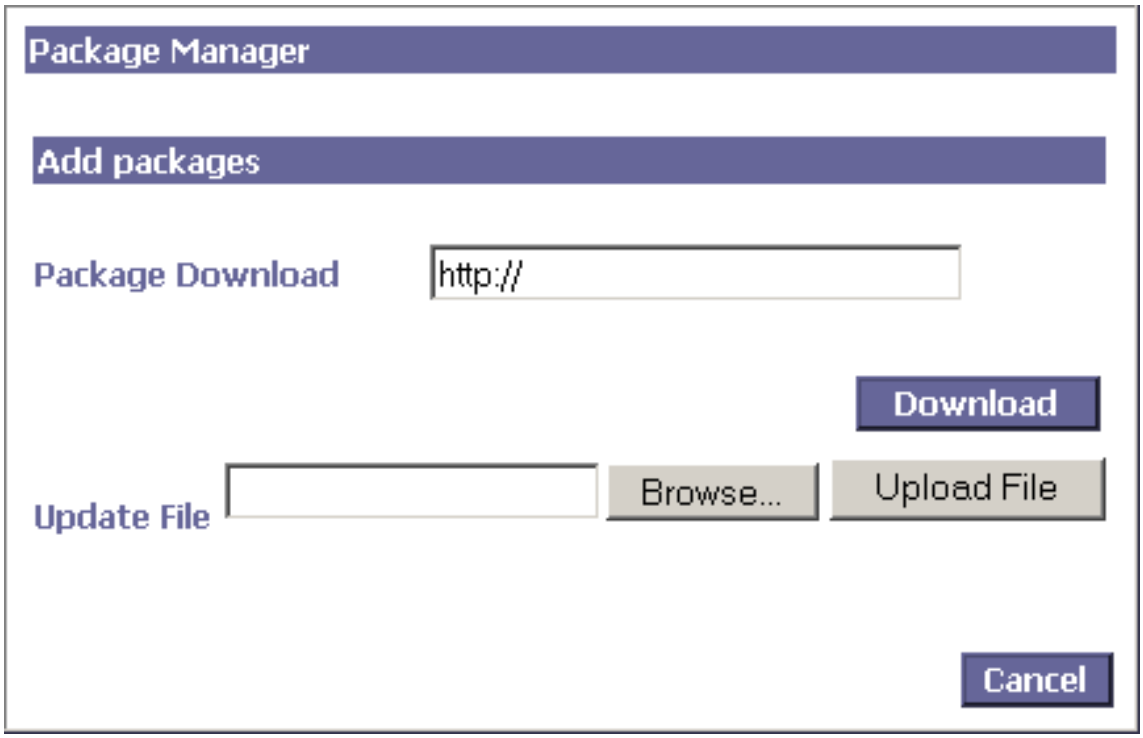


Figure 40 Adding a new package

Boot Systems Manager

The **Boot Systems Manager** allows more than one system to exist concurrently inside the COSMOS OS. The purposes for having multiple systems are:

1. The administrator can duplicate the existing (running) system and use the duplicate system to test new packages.
2. The administrator has the choice of keeping different generation of the systems after upgrading. If necessary, the administrator can restore the system to a previous version.

The Boot Systems Manager has the following important features:

1. New system can be downloaded from the Internet.
2. New system can be uploaded from a bootable CDROM.
3. Backups and packages are shared by (ie they are available to) all the systems.

Figure 41 Boot Systems Manager

Systems Manager

The **Systems Manager** contains the list of all the available systems. At all time, there is only one active system, with the status **"Currently running system"**.

The features on this screen are:

1. **Trial Boot**
   Restart and boot the COMOS using the selected system. However, the default system is not changed. This feature will only boot the COSMOS with the selected system *ONCE*.
2. **Default Boot**

Set the selected system as the default system. Selecting this feature will restart the COSMOS.

3. **Duplicate**
   To make a duplicate of the selected system. You will be prompted for a name for the duplicated system.
4. **Delete**
   Remove the system.
5. **Duplicate current system**
   To make a duplicate copy of the current default system.

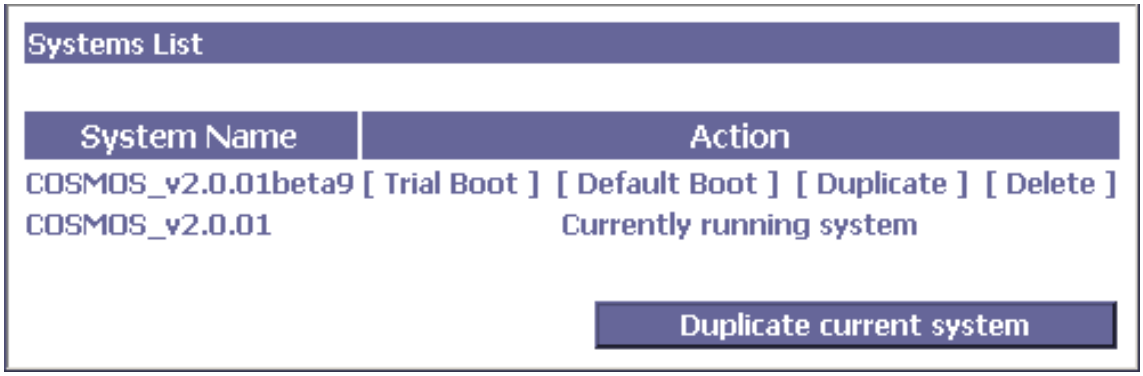


Figure 42 Systems List

When you are duplicating the current system, the following page will be shown.

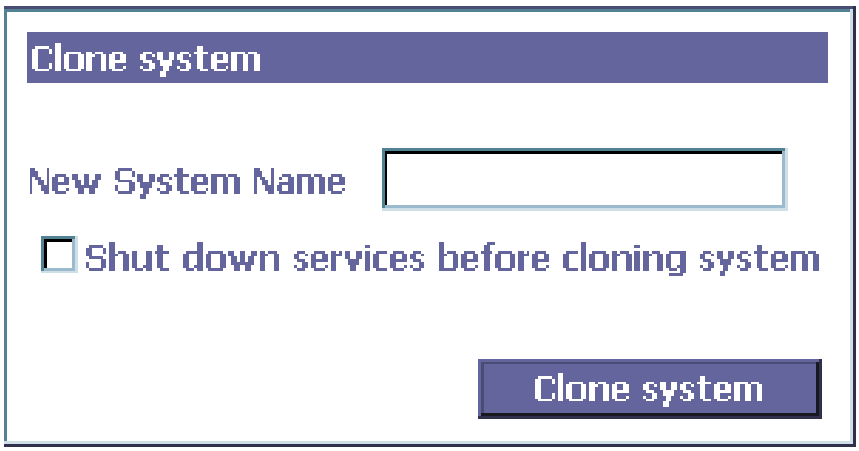


Figure 43 Duplicate current system

Enter a name for the new system in the **New System Name** text box. When copying a running system, there is a risk that some files are being used by running processes and cannot be copied correctly. To reduce that risk, non-essential services can be shutdown during the system

copy by selecting the **Shut down services before cloning system** check box.

Click on the **Clone system** button to start duplicating the system.

When you perform a duplication or a deletion, a status progress page will be shown.

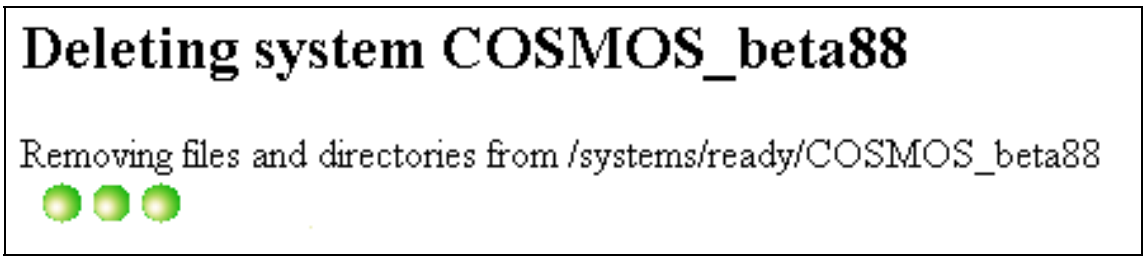


Figure 44 Progress Update

System Images Manager

The **System Images Manager** contains a list of system images that was uploaded from CDROMs or downloaded from the Internet. The CDROMs and Internet download sites are provided by Celestix, as well as third party developers.

Figure 45 System Images List

To install a new image, click on the **Add new image** button.

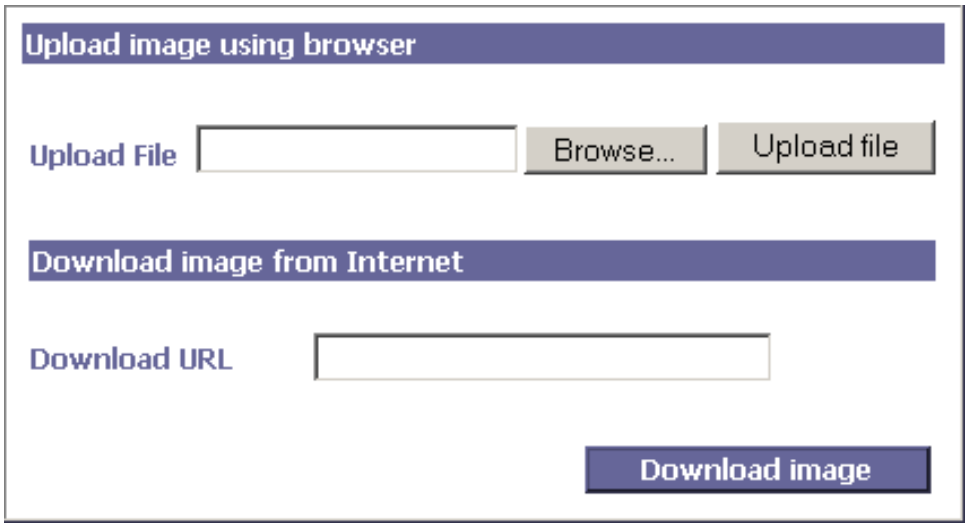


Figure 46 Install New Image

To get an image from a CDROM:

1. Insert the CDROM into a desktop computer.
2. Clcik on the **Browse** button.
3. A "**Choose File**" interface will be shown. Use it to navigate to the CDROM drive and select the image file.

To get an image from the Internet:

1. Enter the URL address. It can be an ftp site, eg: ftp.celestix.com/i/123.tar.gz, or a http site: eg. www.celestix.com/download/images/123.tar.gz
2. Click on **Download image** to start the downloading.

After obtaining an image, it will be shown on the **System Images List** (see Figure 45). You need to **Install** the image, so that it will be make available as a system in the Systems Manager.

- **New System Name**: Give a name to this image. This name will be shown on the list of the Systems Manager.
- **Copy current system configuration**: Select *YES* will copy the current configuration of the system (eg. Host name, IP addresses etc) into the new system. Generally, if the new image is an upgrade or new version of the existing active system, you should select *YES*. On the other hand, if the new image is a whole new application, it is better to select *NO*.

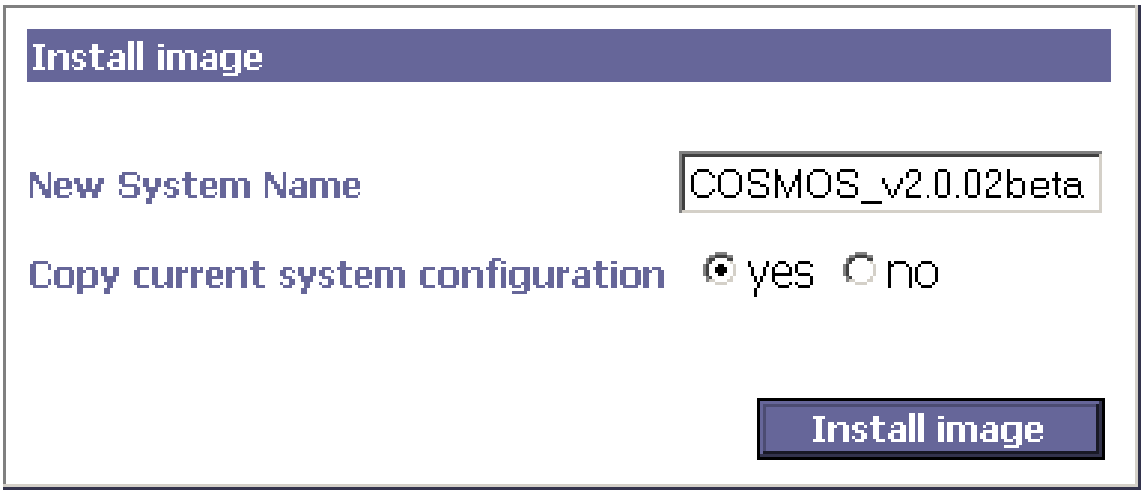


Figure 47 Install Image

To delete an image, click on the **Delete** option.

Figure 48 Delete System Image

IPv6 Configuration

The IPv6 configuration menu is used to set up the IPv6 network configuration for the COSMOS Security Appliance. In this set of menus, the administrator can set up up to five interfaces.

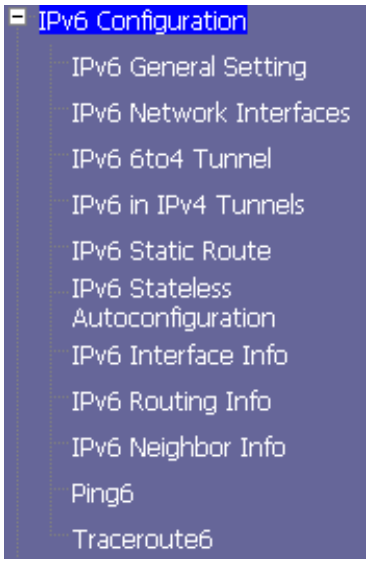


Figure 49 IPv6 menu

One 6to4 tunnel and several 6in4 tunnels can be configured from this menu. All these tunnels are transition mechanisms allowing isolated IPv6 domains to communicate with each other before the full transition to a native IPv6 backbone.

IPv6 Static Routing to other networks via interfaces and tunnels can be configured from this menu as well.

The Stateless Autoconfiguration Menu allows the administrator to configure Router Advertisement Daemon, which advertise the IPv6 stateless autoconfiguration message in the network environment.

Three IPv6 information menus show raw system status of IPv6 interface table, IPv6 Routing Table and IPv6 Neighbor Table, which is collected from the COSMOS Security Appliance.

The integrated IPv6 network utilities like ping6 and traceroute6 help the administrator to test the network connection and configuration.

IPv6 General Setting

This menu allows the administrator to enable IPv6 and IPv6 routing on the COSMOS Security Appliance.

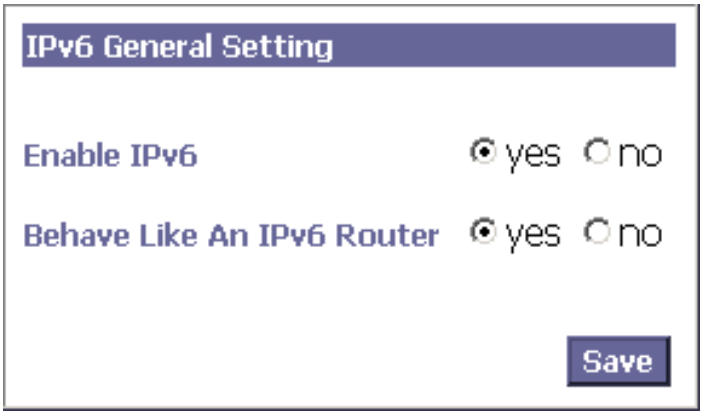


Figure 50 IPv6 General Setting Page

Select whether to enable the **Enable IPv6** and click **Save** to save your setting.

Select whether to enable the **Behave Like An IPv6 Router** and click **Save** to save your setting. And you will see the following screen:

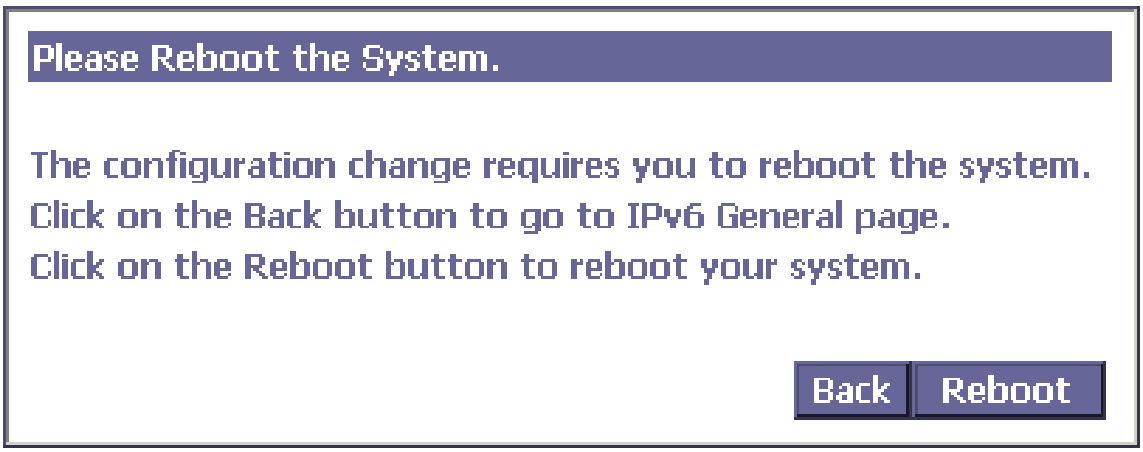

Please Reboot the System.
The configuration change requires you to reboot the system.
Click on the Back button to go to IPv6 General page.
Click on the Reboot button to reboot your system.
Back
Reboot

Figure 51 Please Reboot the System Page

If you want to activate the change, you should click **Reboot**. Or you can click **Back** to skip the rebooting and reboot the system later.

IPv6 Network Interfaces

This menu allows the administrator to configure the IPv6 address of network interfaces.

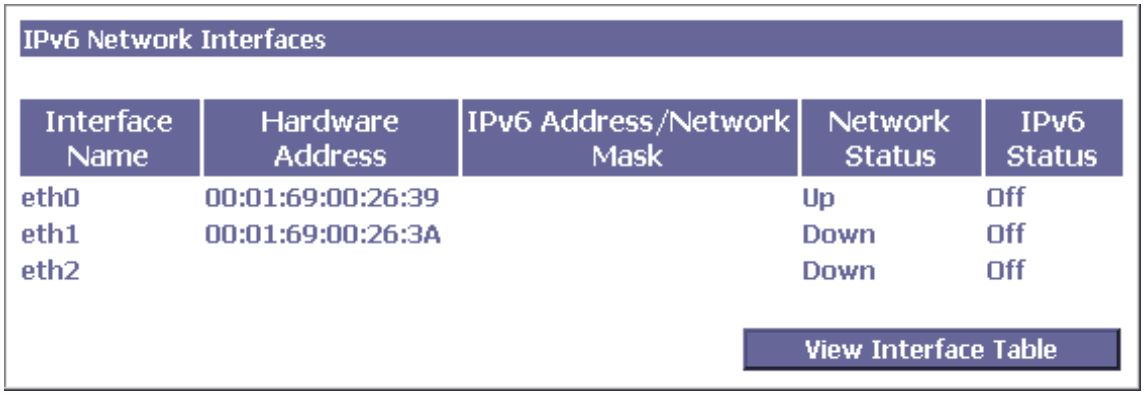


Figure 52 IPv6 Network Interfaces Page

To configure any of the network interfaces, click on the network interface name. For example, if you want to configure the eth0 interface, click on **eth0**. The following page will be shown.

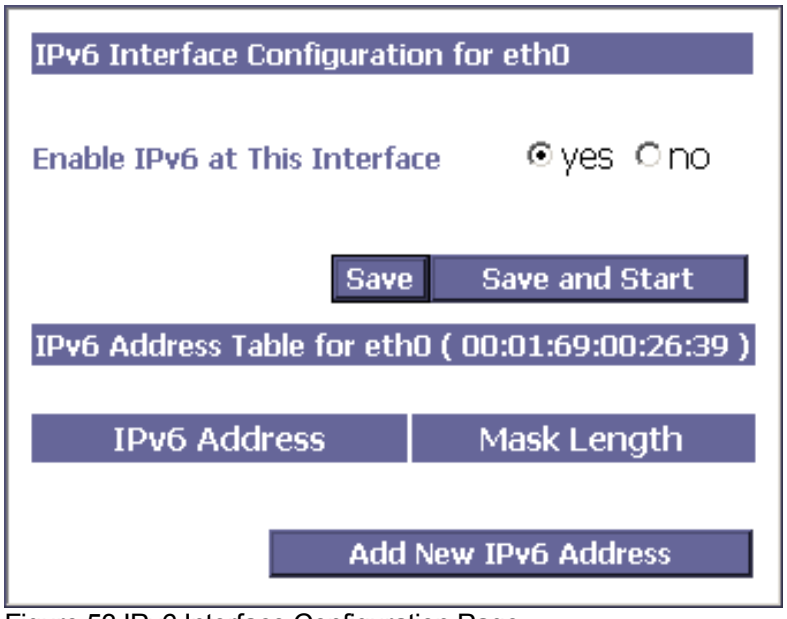


Figure 53 IPv6 Interface Configuration Page

Select whether to **Enable IPv6 at This Interface**. Click **Save** to save your setting, or click **Save and Start** to save and activate your setting.

To configure a new IPv6 address, click **Add New IPv6 Address**.

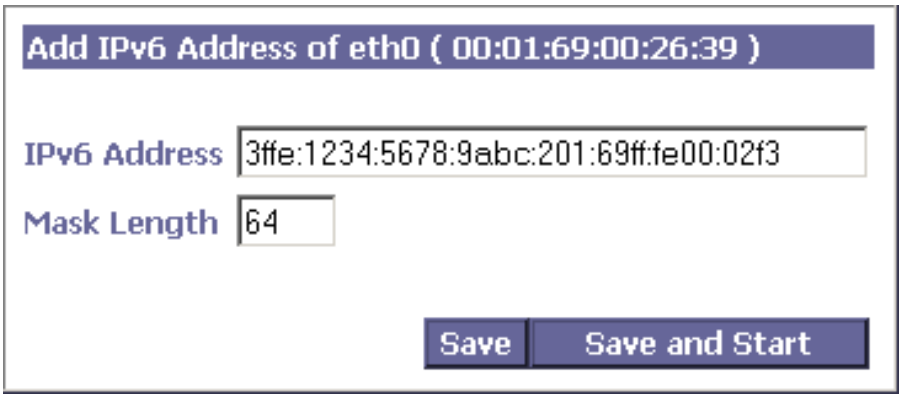


Figure 54 Add IPv6 Address Page

Fill in the IPv6 address and mask length into **IPv6 Address** and **Mask Length** properly. Click **Save** to save your setting, or click **Save and Start** to save and activate your setting.

If you want to delete a IPv6 address (eg. 3ffe:1234:5678:9abc:201:69ff:fe00:02f3), click the IPv6 address you wish to delete. Click **Delete** to delete the IPv6 address.

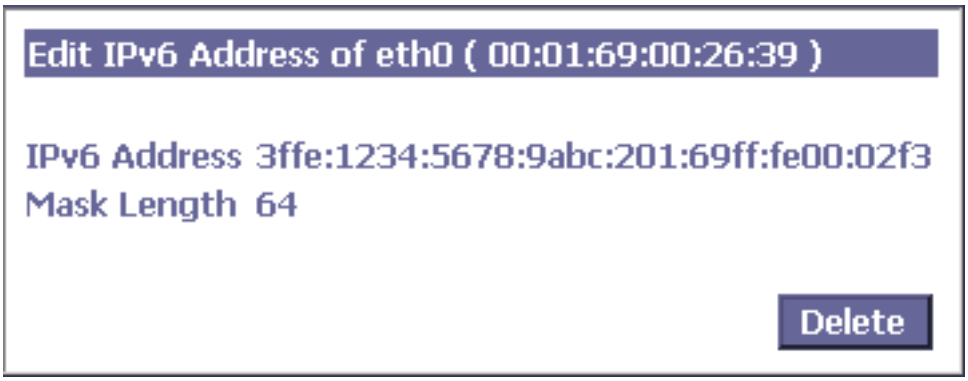


Figure 55 Edit IPv6 Address Page

IPv6 6to4 Tunnel

This menu allows administrator to set up an IPv6 6to4 tunnel. IPv6 6to4 tunnel replaces old IPv4-compatible tunnel. Because IPv6 6to4 tunnel uses a unique routing prefix 2002::/16, it became the ideal way to connect to the existing 6bone even if your ISP does not support IPv6.

Figure 56 IPv6 to IPv4 Configuration Page (6to4 not running)

For further information on 6to4 tunnel, refer to *RFC 3056, Connection of IPv6 Domains via IPv4 Clouds.*

Select whether to **Enable 6to4 Tunnel**. Select which **Local IPv4 Address** you wish to use. Fill in a global and routable IPv4 address into **IPv4 Address of 6to4 Relay Router**. Click **Save** to save your setting, or click **Save and Start** to save and activate your setting.

If you do not know any of the 6to4 relay router, try the anycast IPv4 address 192.88.99.1, which would search the nearest 6to4 Relay Router for you.

If the setting is correct, you will see an IPv6 address with 2002::/16 prefix is assigned to the tunnel. The following screen will be shown.

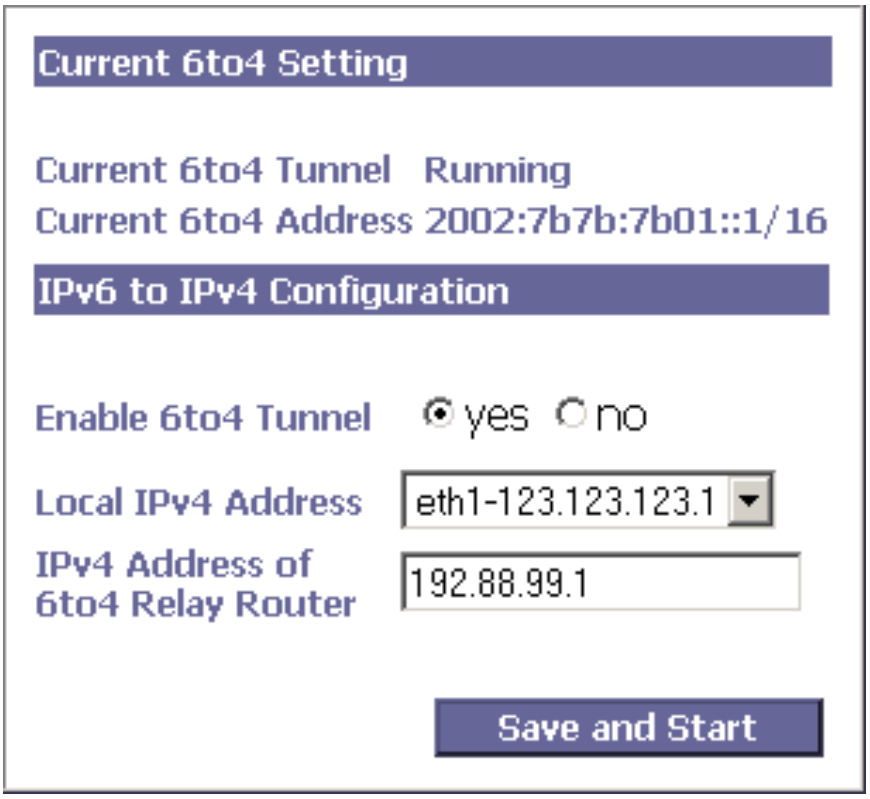


Figure 57 IPv6 to IPv4 Configuration Page (6to4 running)

IPv6 In IPv4 Tunnel

This menu allows the administrator to set up IPv6 in IPv4 tunnels. IPv6 in IPv4 tunnel is a dedicated point-to-point tunnel. So IPv6 in IPv4 tunnel can send IPv6 over an IPv4 backbone. With proper routing setting, two isolated IPv6 domains will be able to communicate without the need to upgrade the IPv4 infrastructure.

For further information on IPv6 in IPv4 tunnel, refer to *RFC 2893, Transition Mechanisms for IPv6 Hosts and Routers*.

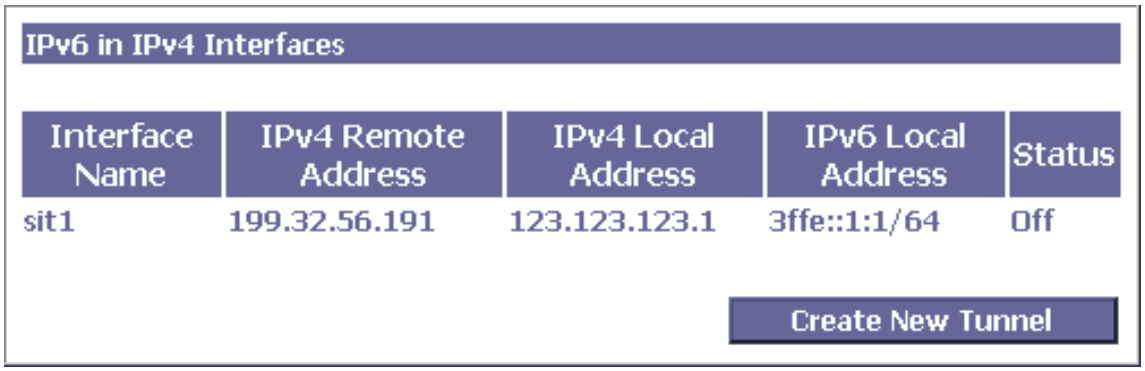


Figure 58 IPv6 in IPv4 Interfaces Page

This menu allows administrator to configure the IPv6 in IPv4 Tunnels.

Click **Create New Tunnel** to create a new IPv6 in IPv4 tunnel.

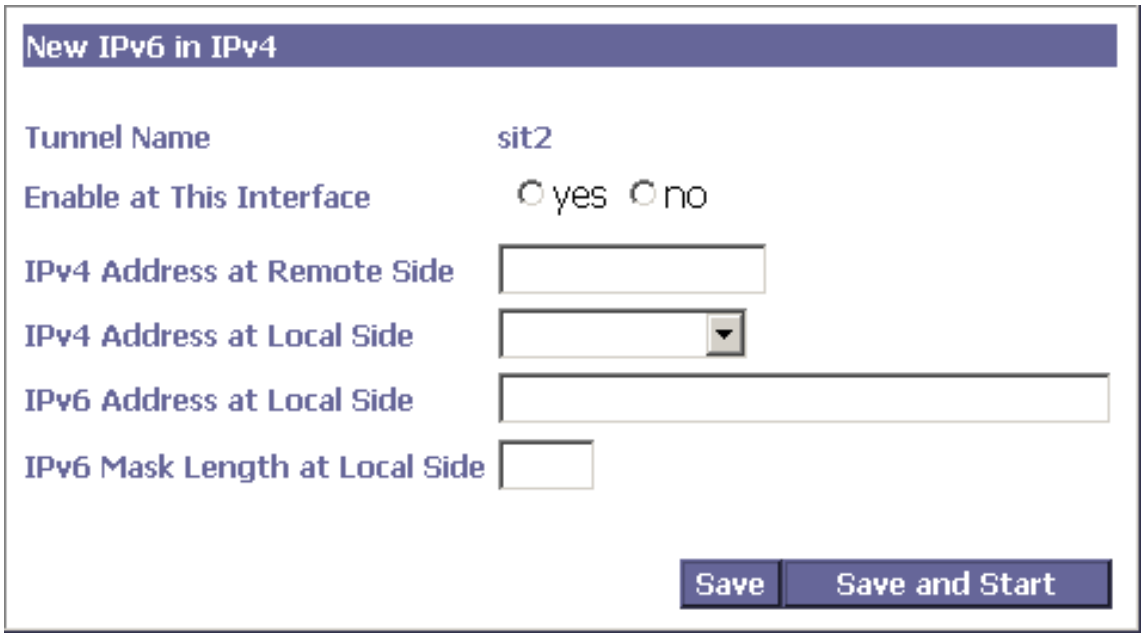


Figure 59 New IPv6 in IPv4 Page

Select whether to **Enable at This Interface**. Fill in a routable IPv4 address into **IPv4 Address at Remote Side**. Select which Local IPv4 Address you wish to use in the **IPv4 Address at Local Side**. Fill in a routable IPv6 address and mask length into **IPv6 Address at Local Side** and **IPv6 Mask Length at Local Side**, respectively.

Click **Save** to save your setting, or click **Save and Start** to save and activate your setting.

If you want to delete or modify the IPv6 in IPv4 tunnel displayed, click on the Interface Name, you will see the following screen.

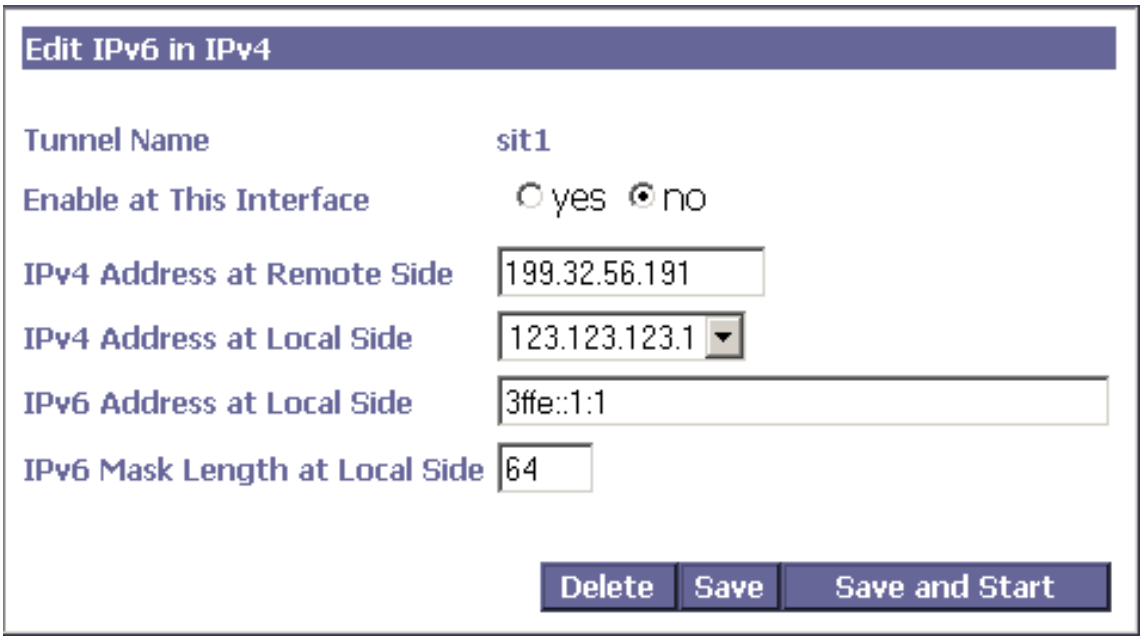


Figure 60 Edit IPv6 in IPv4

To delete the existing setting, click **Delete** to delete this tunnel. To change the existing setting, change the setting first. And click **Save** to save the change, and click **Save and Start** to save and activate the change.

IPv6 Static Routes

This menu allows the administrator to set up the static routes including default gateway.

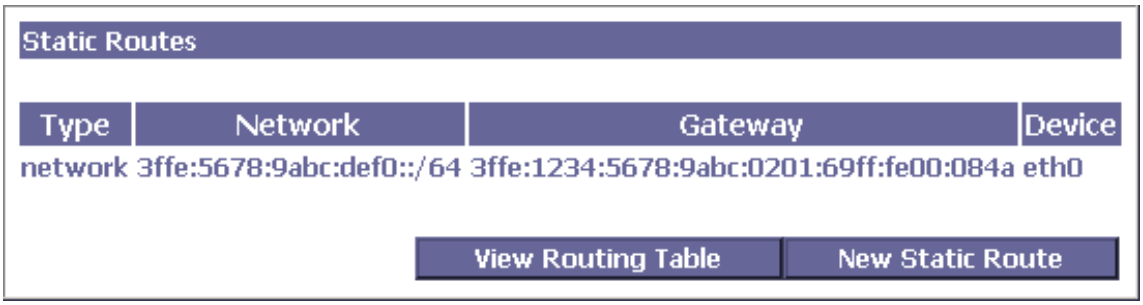


Figure 61 IPv6 Static Routes Page

Click **New Static Route** to create a new static route. Click **View Routing Table** to see the IPv6 routing table.

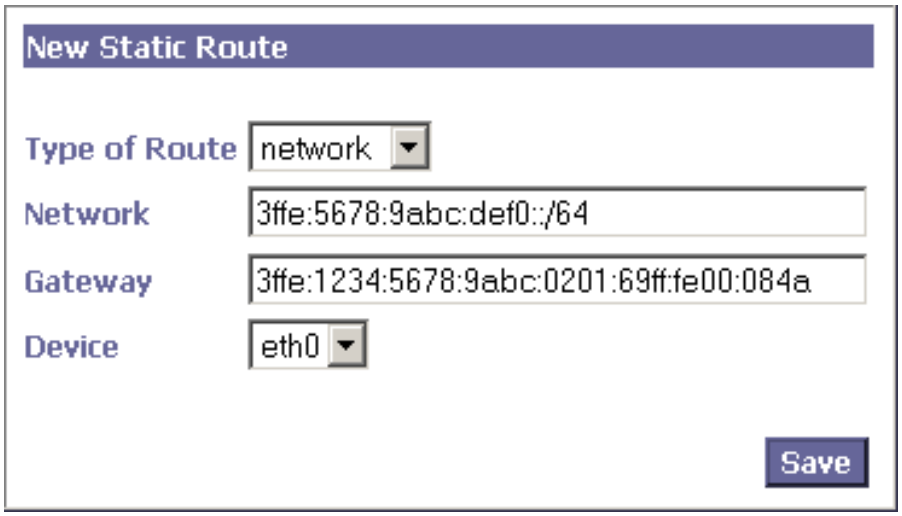


Figure 62 New Static Route Page

There are three types of routes:

1. **Network** – set up the route to a network as defined in the Network field.
2. **Tunnel** – set up the route to a network as defined in the Network field via a tunnel as defined in the Device field. Gateway field is not used.
3. **Gateway** – set up the default gateway. Network field is not used.

Click **Save** to save and activate the setting.

If you want to delete or modify the static route displayed, click on the actual route you wish to change.

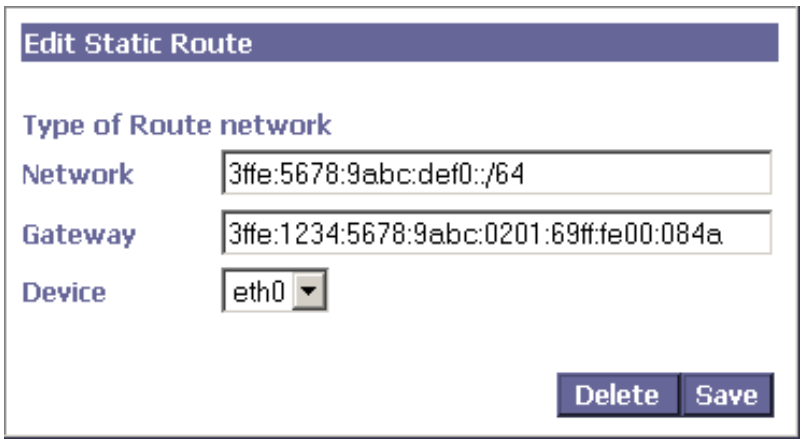


Figure 63 Edit Static Route Page

To delete the existing setting, click **Delete** to delete this tunnel. To change the existing setting, change the setting first. And click **Save** to save and activate the change.

IPv6 Stateless Autoconfiguration

The Stateless Autoconfiguration allows administrator to configure Router Advertisement Daemon (RADVD), which advertises the IPv6 prefix and the local link IPv6 address of the router, and helps clients in this network section to configure themselves.

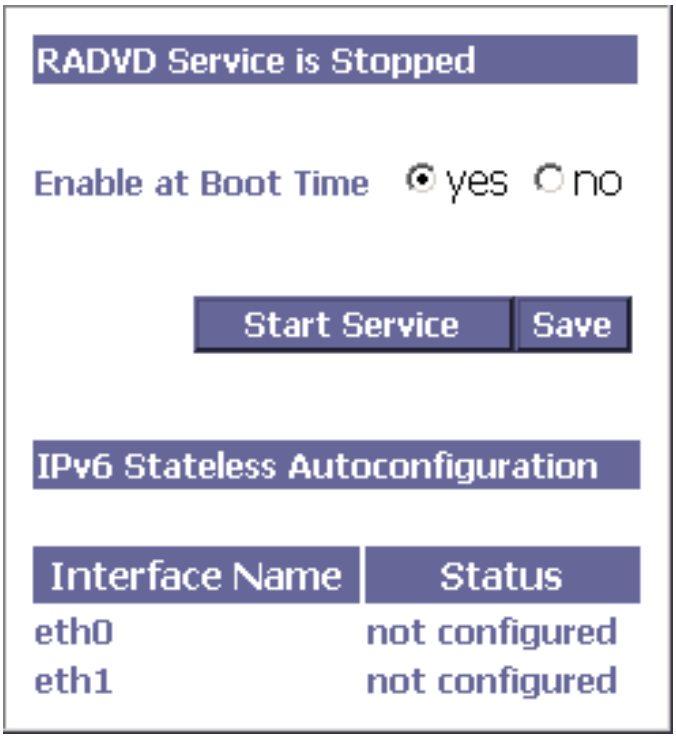


Figure 64 IPv6 Stateless Autoconfiguration Page

Select whether to enable the RADVD service at boot time. Click **Save** to save your setting. Click **Start/Stop Service** to start and stop this service.

To configure the RADVD setting for an interface, click on the interface name.

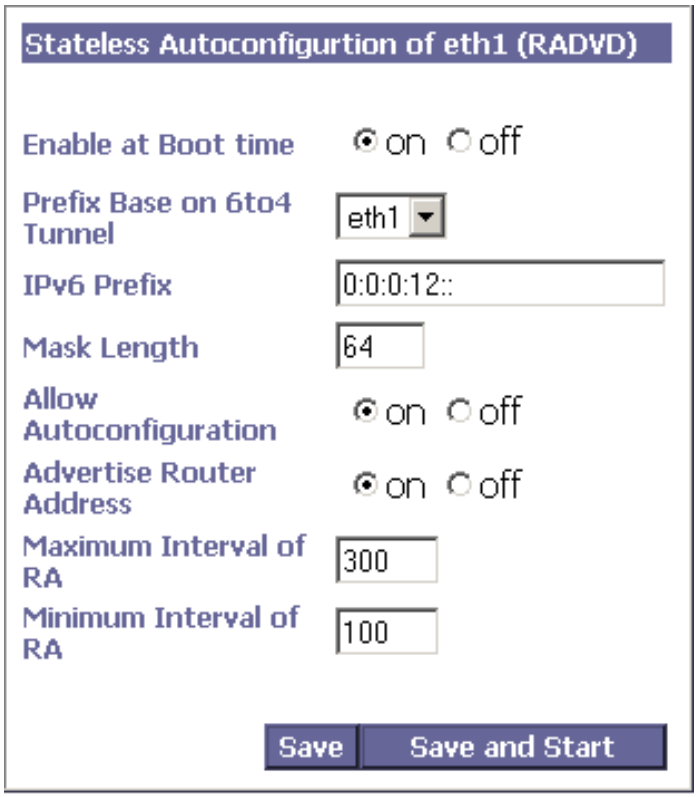


Figure 65 Stateless Autoconfiguration Page

Select whether to enable the service for this interface in **Enable at Boot Time** field

If you want to generate prefix based on an existing 6to4 tunnel, select the physical interface which 6to4 tunnel running in **Prefix Base on 6to4 Tunnel**. And fill in an IPv6 prefix like "0:0:0:xxxx::" in the **IPv6 Prefix** field.

If you want to define the IPv6 prefix yourself, select blank in the **Prefix Base on 6to4 Tunnel**, fill in the IPv6 prefix into **IPv6 Prefix** field. Fill in "64" into Mask Length, do not use any other number.
Select whether to **Allow Autoconfiguration**. This option allows clients to configure the IPv6 address themselves.

Select whether to **Advertise Router Address**. This option allows clients to configure the default gateway themselves.

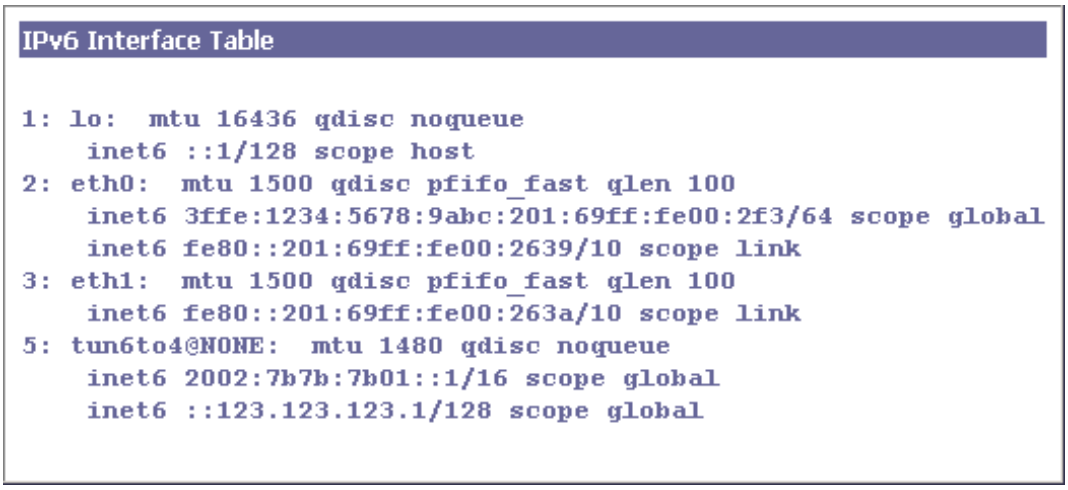
Fill in **Maximum Interval of RA**, this field is optional, its default value is 300 seconds.

Fill in **Minimum Interval of RA**, this field is optional, its default value is 100 seconds.

Click **Save** to save the setting. Click **Save and Start** to save and activate the setting.

IPv6 Interface Info

This menu item displays the IPv6 status of all interfaces and tunnels.


IPv6 Interface Table
1: lo: mtu 16436 qdisc noqueue
inet6 ::1/128 scope host
2: eth0: mtu 1500 qdisc pfifo_fast qlen 100
inet6 3ffe:1234:5678:9abc:201:69ff:fe00:2f3/64 scope global
inet6 fe80::201:69ff:fe00:2639/10 scope link
3: eth1: mtu 1500 qdisc pfifo_fast qlen 100
inet6 fe80::201:69ff:fe00:263a/10 scope link
5: tun6to4@NONE: mtu 1480 qdisc noqueue
inet6 2002:7b7b:7b01::1/16 scope global
inet6 ::123.123.123.1/128 scope global
Figure 66 IPv6 Interface Table Page

IPv6 Routing Info

This menu item displays the IPv6 routing table.

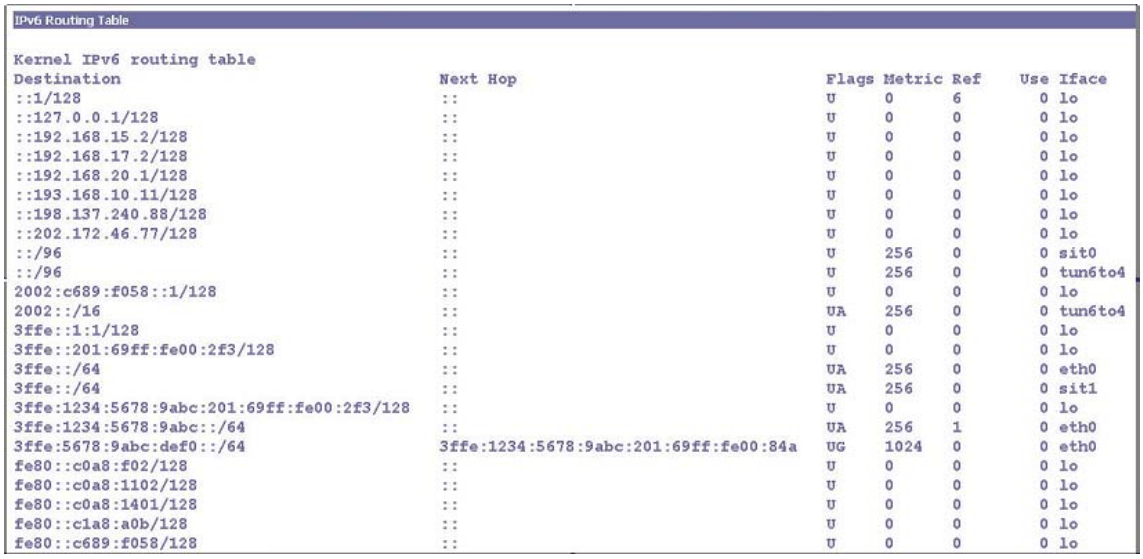


Figure 67 IPv6 Routing Table Page

IPv6 Neighbor Info

This menu item displays the IPv6 neighbor table.

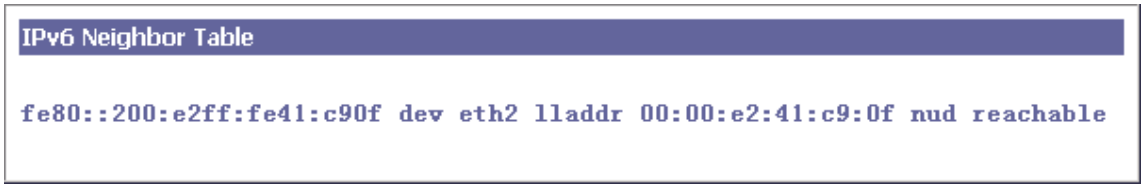


Figure 68 IPv6 Neighbor Table Page

Ping6

This menu allows you to ping6 a network host to test your network connection and configuration.

Fill in the IPv6 address you wish to ping, and click **Start Ping6** to start ping6 test.

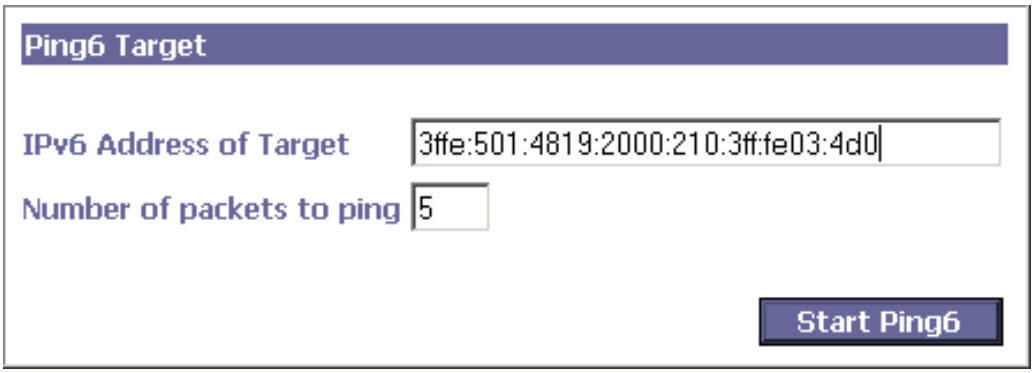


Figure 69 Ping6 Page

Traceroute6

This menu allows administrator to trace the route to a host to test your network connection and configuration.

Fill in the IPv6 address you wish to trace the route, and click **Start Trace Route** to start the traceroute6 test.

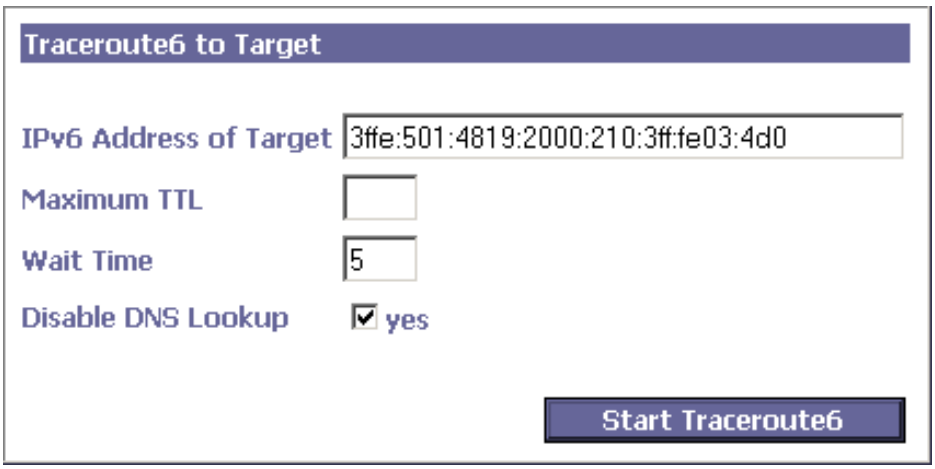


Figure 70 Traceroute6 Page

Services Configuration

The services configuration menu allows the administrator to configure network services available on the COSMOS Appliance. The administrator is able to start or stop a service, and enable or disable a service at boot time.

DHCP Server

Enabling the DHCP service allows network clients to get an IP address from the COSMOS Appliance.

Select whether to enable the DHCP service at boot time, and click **Save** to save your setting. You can also click on **Start Service** to save your setting, and start the service at the same time.

To configure the DHCP settings for a network, click on the interface name (**eth0**, **eth1**) attached to that network. You will be able to configure DHCP service settings for that interface.

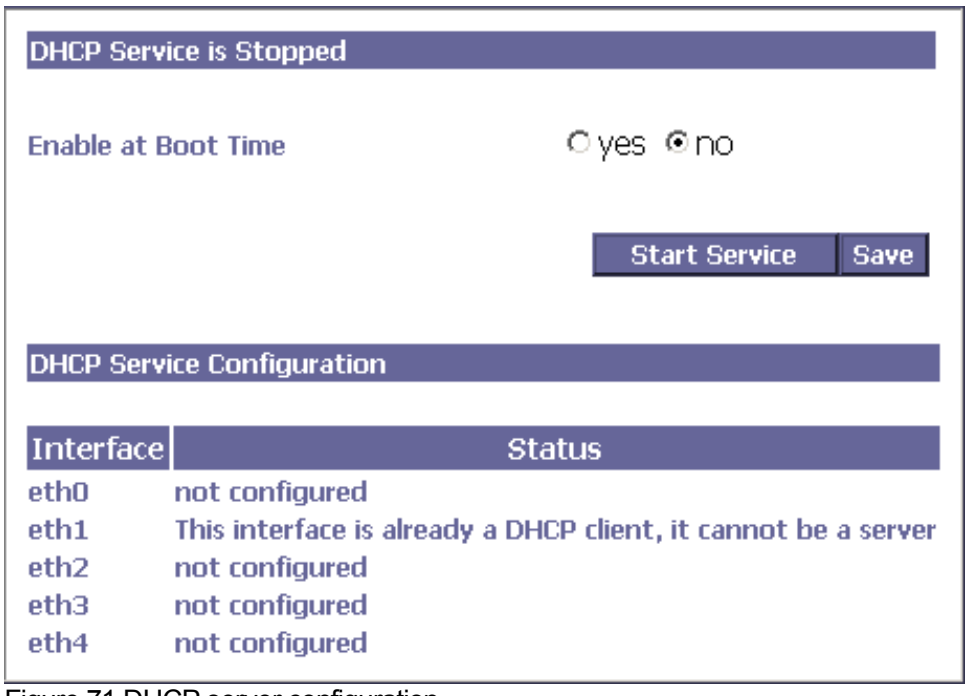


Figure 71 DHCP server configuration

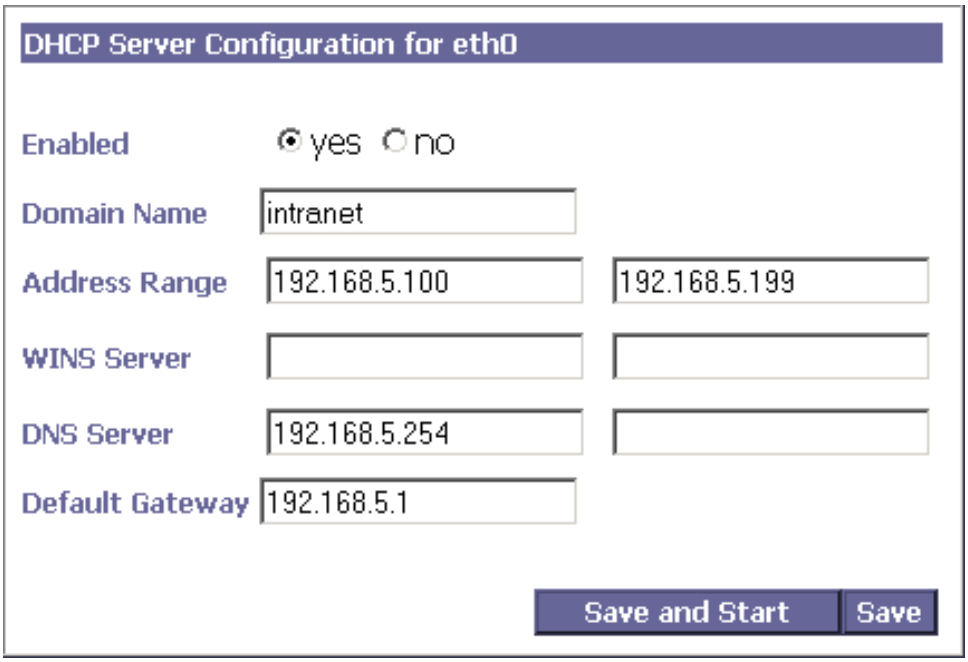


Figure 72 DHCP server configuration for eth0

Enter the domain name for the network in the **Domain Name** box.

Enter the DHCP address range in the **Address Range** boxes. These two values must be dotted IP addresses. The first value must be the beginning of the IP address range, and the second value must be the end of the IP address range.

The hostnames or IP addresses of up to two WINS servers can be entered in the **WINS Server** boxes. If there are no WINS servers on the network, they can be left blank.

The IP addresses of up to two DNS servers can be entered in the **DNS Server** boxes.

Fill in the **Default Gateway** box with the IP address of the gateway for this network.

Click on **Save** to save your settings, or **Save and Start** to save your settings and restart the DHCP server.

List Of Services

This menu allows the administrator to start or stop certain services. It also allows the administrator to configure services to start at boot time.

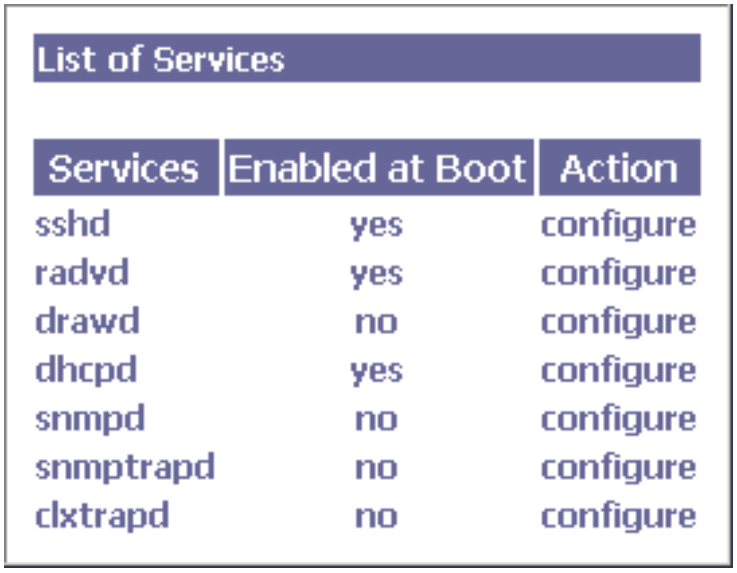


Figure 73 List of services

To change the settings for a particular service, click on the **configure** link next to the service.

The following configuration box will be shown.

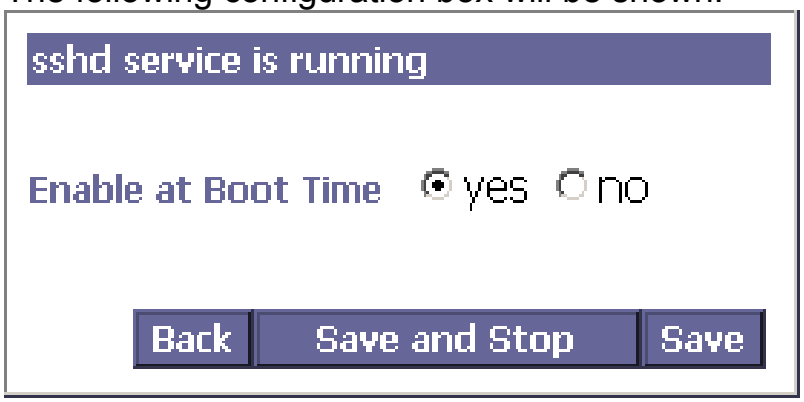


Figure 74 Configuring a service

Select whether to enable this service at boot time. You can save the setting by click on the **Save** button, or save your settings and stop the service by clicking on the **Save and Stop** Button.

System Settings

The system settings menu allows the administrator to configure system parameters such as the web user interface and the administrator account. System back up and restore is also configured from this menu.

For proper operation of the system, the date and time as well as the time zone can be set up from this menu.

The COSMOS Appliance can be shut down or rebooted from this menu. For remote access when the network is not accessible from the Internet, a dial-in console can be set up here.

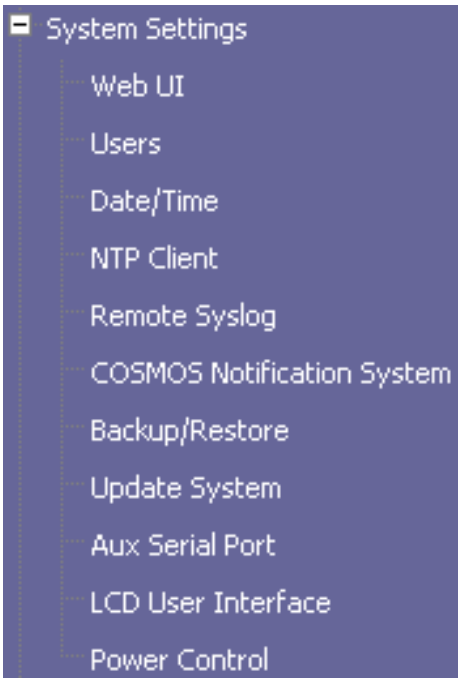


Figure 75 System Settings

Web User Interface Configuration

The web user interface is used to configure the COSMOS Appliance using a web browser from the network or Internet. By default, 128-bit SSL is used and the webui can be accessed at port 10000 at all the interfaces on the appliance. This menu can be used to configure the IP address to bind the port to as well as change the port number.

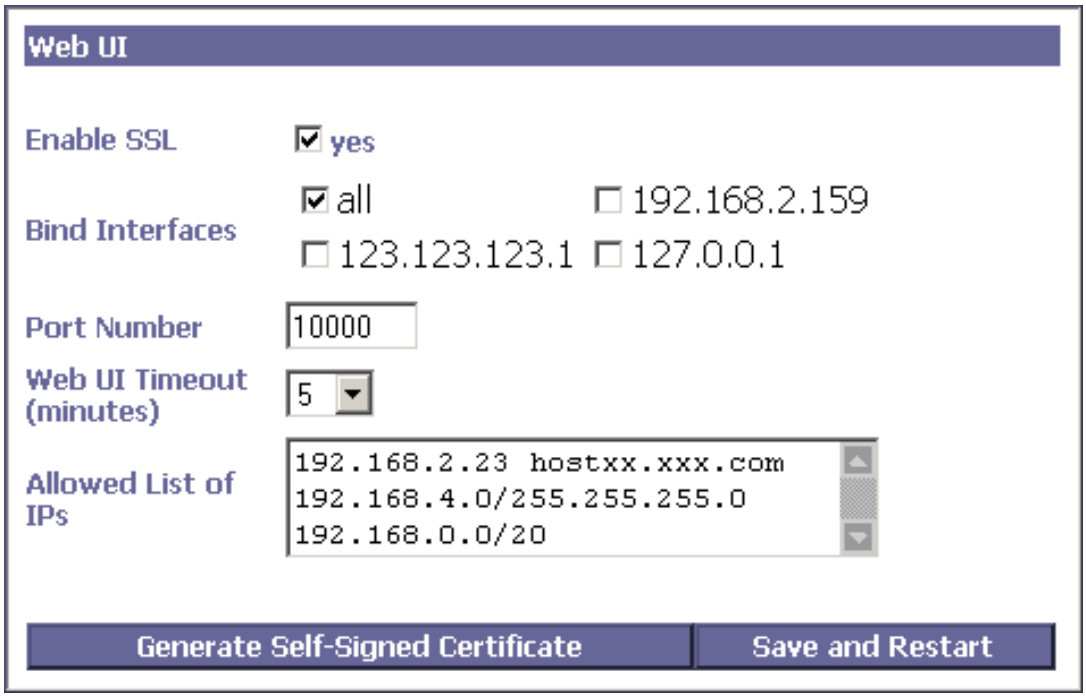


Figure 76 Web UI configuration

To enable the use of 128-bit SSL in the web user interface, check the **Enable SSL** check box. To disable any SSL, uncheck the same box.

Check the IP address of the interfaces to bind to in the **Bind Interfaces** check boxes. Check the **all** check box if you want the web user interface to bind to all interfaces. To make accesses to the web user interface more secure, bind only to the interfaces that are internal. Then use SSH or VPN to securely tunnel to these interfaces.

WARNING. If you bind the web user interface to an IP address of an interface and you change the IP address of that interface later, the web user interface will not be accessible anymore. Go to the troubleshooting section on how to solve this problem.

WARNING. Verify that the new port number is not being used by any other services by using the Network Stats menu item in the System Information menu. Services which bind to a port have LISTEN in their State field.

To change the port number of the web user interface from the default 10000 to another port, fill in this value in the Port Number field.

The **Time Out** option is to change the web user interface time out duration.

The function of the **Allowed List of IPs** field is to enable you to provide a list of host names and addresses that are allowed to access the WebUI. The following inputs are valid:

- **Hostname** - Hostname of a system **e.g.** myhost
- **FQDN Hostname** - Hostname with Domain Name **e.g.** myhost.example.com
- **IP Address** - An IP Address of a system **e.g.** 192.168.1.1
- **Network/Subnet** - Network Address with Subnet **e.g.** 192.168.0.0/255.255.240.0
- **Network/CIDR** - Network Address with CIDR subnet **e.g** 192.168.0.0/20

You can put in all the different combinations of inputs as long as they are seperated by a space.

WARNING: Using this setting may potentially deny you access from the WebUI. If that happens, you can reset the WebUI back to default settings on the command line.

1. SSH to the server as the administrator.
2. Enter su - to become the root user
3. Type in the command /usr/sbin/webuid_reset
4. webuid_reset will replace the older configuration file with a factory default and start up the webserver in port 10000

Click on the **Save and Restart** button to save the configuration and restart the web user interface. The web user interface daemon will be restarted and you need to login to the web user interface again.

To generate a new self-signed certificate for the SSL session, click on the **Generate Self-Signed Certificate** button.

Fill in the **Country Code**, **Organization**, **Organization Unit**, **Host Name** and **Email Address** fields. These fields are used to generate a new certificate for the SSL session.

Click on the **Generate Certificate** button to generate a new certificate.

WARNING. The current certificate used in this session will be overwritten with the new certificate. You should reload your current session in order to use the new certificate.
NOTE. The new certificate will not be activated until you have restarted your web user interface daemon. You can do this either in the Services menu or by clicking on the Save and Restart button in the Web User Interface Configuration.

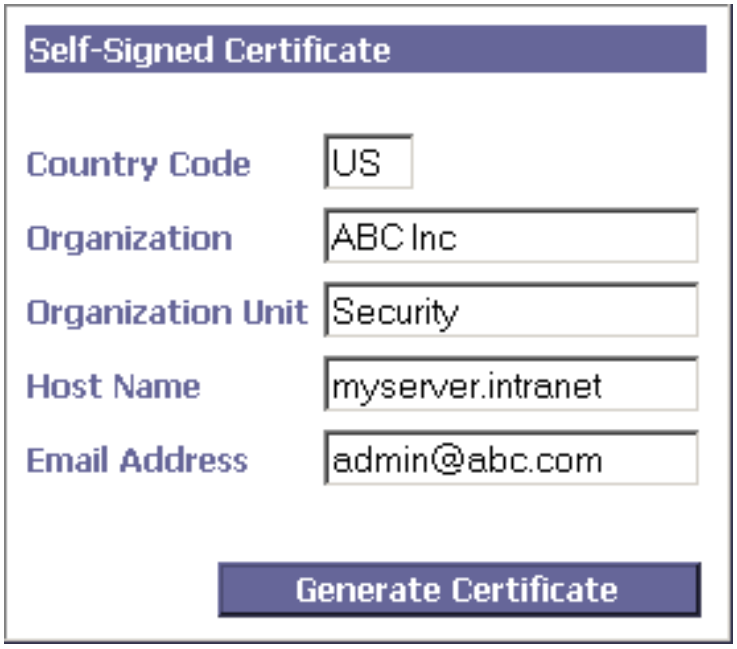


Figure 77 Generating Self-Signed Certificate

Web User Interface User Account

The web user interface can be administered by more than one user. Each user shown on the user list is able to log on to the web user interface, and view or modify settings in the COSMOS system.

The COSMOS system is configured with a default administrator account, which cannot be deleted. The administrator account user is also the only user who can log on to the console of the COSMOS system. Only the username and password of the administrator account can be changed.

New non-admin users can be created to administer the COSMOS system.

Each non-admin user has either 'Read-Only' or 'Read/Write' permissions.

'Read/Write' users are able to both view and change settings on the web user interface.

'Read-Only' users are only able to view settings on the web user interface. They are unable to change settings on the system through the web user interface.

The access for a non-admin user can also be restricted by reducing the menu items the user has access to.

These restrictions make it possible to create, for example, 'Read-Only' users who only have access to the 'Network Interface' portion of the web user interface, or 'Read-Write' users who can change only the 'System Settings' portion of the web user interface.

User List

The user list shows all user accounts created and available on the COSMOS system. Click on a user name to change the user name, password or 'read/write' permissions for that user.

Figure 78 User List

The administrator account user will be indicated by the words 'Administrator account' on the '**Actions**' column. Only the user name and password for the administrator account can be modified. The administrator account cannot be deleted.

Click on a user name to change the user name, password and 'read/write' permissions for that user.
Click on the '**Edit permissions**' link to change the menu items available to a user.
Click on the '**Delete**' link to delete a user.
Click on the '**New User**' button to create a new user.

User Account and Creating A New User

The user name, password and read-write permissions for a user can be modified from this page.

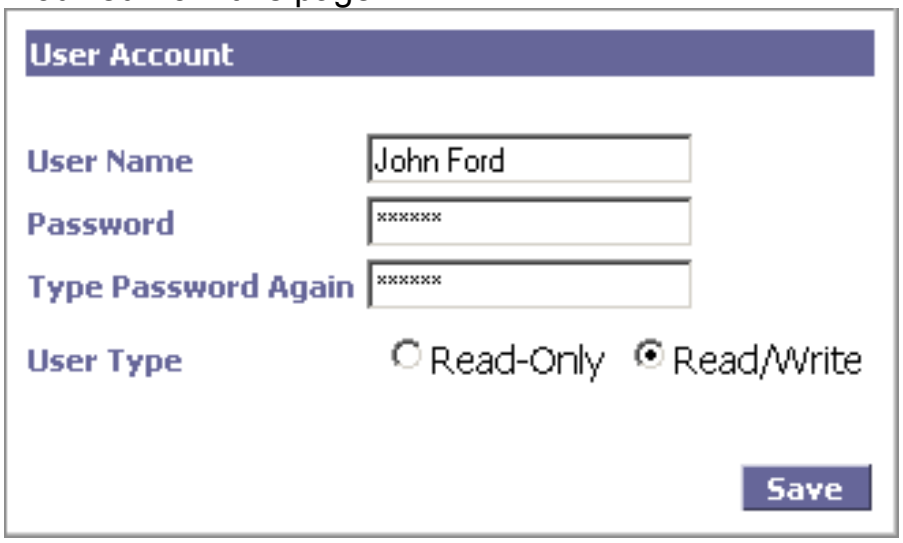


Figure 79 New user account

Note: The administrator account will always have read/write permissions. This cannot be changed.

To change settings for a user, enter a new user name into the '**User Name**' field. Enter a new password into the '**Password**' field. To verify that you have entered the correct password, enter it again into the '**Type Password Again**' field.

If you are creating a new user account, or modifying a non-administrator user account, you will be able to change the 'read/write' permissions of the user. Click the radio-buttons to select whether this user will have '**Read-Only**' or '**Read/Write**' permissions.
Click on the '**Save**' button to update the user's settings.

IMPORTANT. The password for the web user interface administrator account and the root user are bound together. Changing the administrator password will change the root password as well.

If you are modifying a non-administrator user account, a '**Delete**' button will also be available. Click on the **'Delete**' button to delete the currently displayed user account.

The COSMOS Appliance enforces password sanity to prevent the administrator from using a password that is easy to crack or guess. A good password has the following characteristics:

- Easy to remember.
- Contains mixed case letters, numbers and special characters like $%! etc.
- Not based on a dictionary word.

Note: The password used must be at least 4 characters in length, and at most 255 characters.

Edit User Permissions

Menu item access for a user can be edited from this page. The layout of the menu items on this page is exactly the same as the left-hand menu frame of the web user interface.

Figure 80 Setting user's permissions

To enable a menu item for a user, check on the box next to the menu item. If a menu category header (for example, '**Network Interface**' or '**System Settings**') is checked, all menu items that belong to that category are checked as well. This means that the user will have access to all menu items in that category.

Above and below the menu are shortcut buttons to help your selection. Click on '**Check all**' to check all the boxes. This will give access to all menu items to the user, similar to the administrator account. Click on '**Uncheck all**' to uncheck all boxes.

Click on the '**Expand all**' button to expand all menu categories. Click on the '**Collapse all**' button to collapse all menu categories.

Click on the '**Save Permissions**' button to save the current settings for the user. The user may have to login to the web user interface again to access his or her new settings.

Setting The Date/Time/Time Zone

For the appliance to operate correctly, the date, time and time zone has to be set up accurately. You can set the system date, time and time zone from this menu.

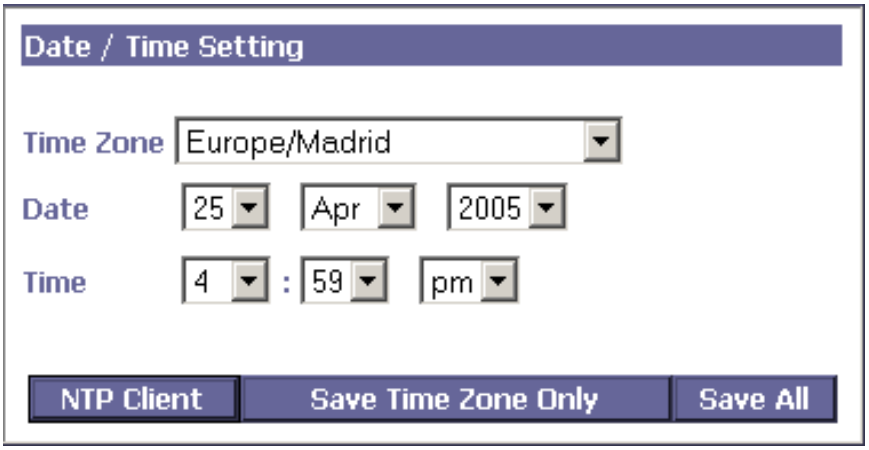


Figure 81 Date, Time and Time Zone setting

Select the time zone from the **Time Zone** drop down selection box.

Click on the **Save Time Zone Only** button to save only the time zone without changing the system date and time. This is done when you want to set the date and time using the NTP client and you only want to change the time zone.

To manually change the system date and time, enter the current date and time into the **Date** and **Time** selection boxes. Then click on the **Save All** button to update the system date and time. The time zone is also updated.

To use a NTP client to update the system date and time, click on the **NTP Client** button. The configuration is described in the next section.

NTP Server

The NTP (Network Time Protocol) Server can be used to synchronise the time between other servers as well as become the NTP Server for the whole network.

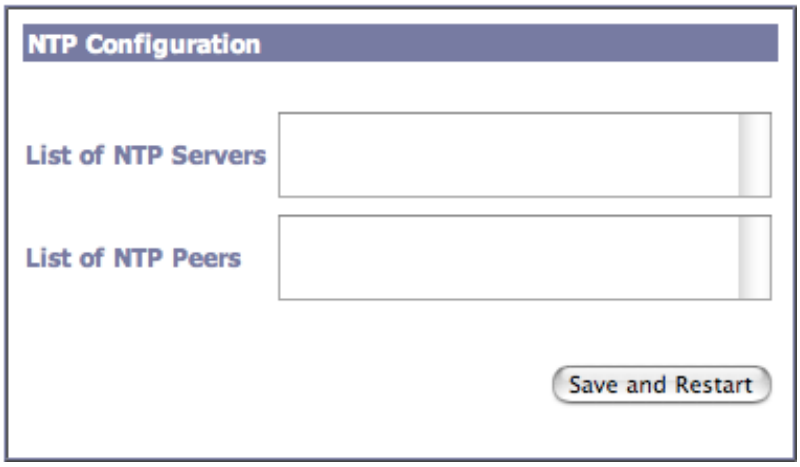


Figure 82: Network Time Server Configuration

There are two input textbox for the NTP Server Configuration:

List of NTP Servers: This allows the ntpd to mobilize a persistent client mode association with the specified remote servers or local radio clock. In this mode the local clock can synchronized to the remote server, but the remote server can never be synchronized to the local clock.

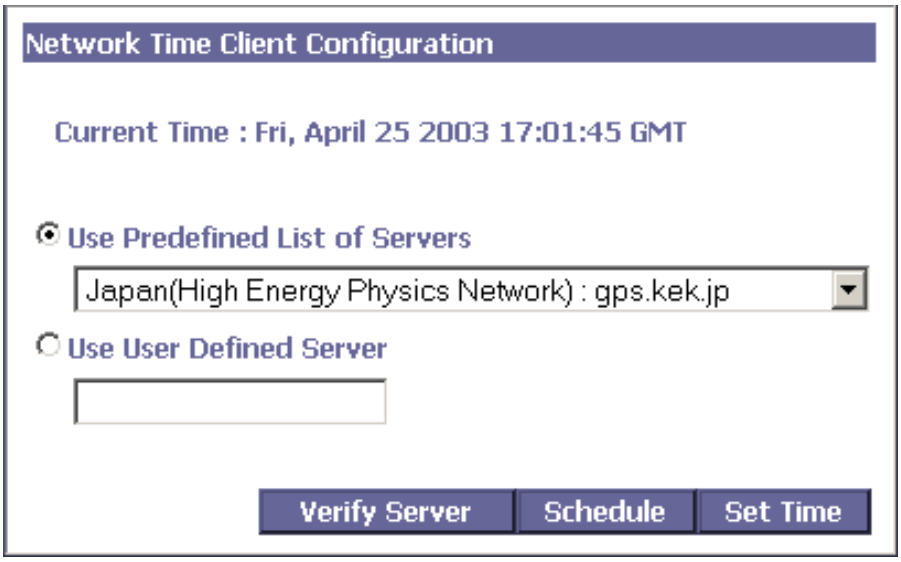
List of NTP Peers: This is for the NTP daemon to mobilize a persistent symmetric-active mode association with the specified remote peers. In this mode the local clock can be synchronized to the remote peer or the remote peer can be synchronized to the local clock. This is useful in a network of servers where, depending on various failure scenarios, either the local or remote peer may be the better source of time.

Note: Due to the nature of the NTP daemon, it is required that the time be set to the correct time (+/- 5 mins margin or error) before using the NTP server functionality. You can use the NTP Client interface to correct the time in the system first. Also the NTP Client scheduling will be disabled when the NTP Server facility is enabled.

NTP Client

The NTP (Network Time Protocol) client synchronizes the system date and time with a NTP server. The NTP server can be located in the same network or in the Internet.

Select a predefined stratum 2 server from the selection box under the **Use Predefined List of Servers** radio button.


Network Time Client Configuration
Current Time : Fri, April 25 2003 17:01:45 GMT
Use Predefined List of Servers
Japan(High Energy Physics Network) : gps.kek.jp
Use User Defined Server
Verify Server
Schedule
Set Time
Figure 83 Network Time Client Configuration

TIP. You should select a server from a country closest to where you are located. This will increase accuracy of the synchronization.

If you have your own NTP server, click on the **Use User Defined Server** radio button and fill in the server host name in the text box below that.

Before you use the NTP server, you should verify the server against the NTP client by clicking on the **Verify Server** button. If the NTP client successfully synchronizes with the NTP server, you can then click on the **Set Time** button to update the system date and time.

The NTP client can also synchronize with the NTP server on a weekly schedule. This keeps the system date and time in sync regularly. Click on the **Schedule** button to set the schedule as shown below.

Check the **Schedule** check box to enable the weekly synchronization with the NTP server.

Select a day of the week to do the synchronization from the **Enter Update Day** drop down selection box.

Select the hour of the day to perform the synchronization from the **Hour** selection boxes.

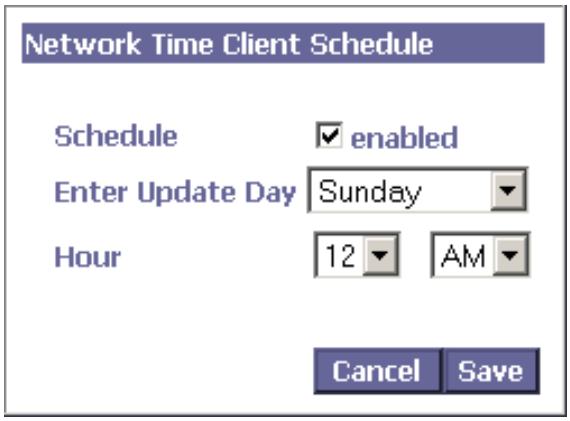


Figure 84 Network Time Client Schedule

Click on the **Save** button to save the schedule.

Remote Syslog

This system allows you to specify external syslog functions and to receive syslog from other servers.

Note that allowing logs from other system will allow logs from any system. It does not differentiate where it gets its logs, hence your firewall rules should be configured to control the syslog. Syslog uses UDP port 514.

The syslog host, if specified, will send all logs to the remote server.

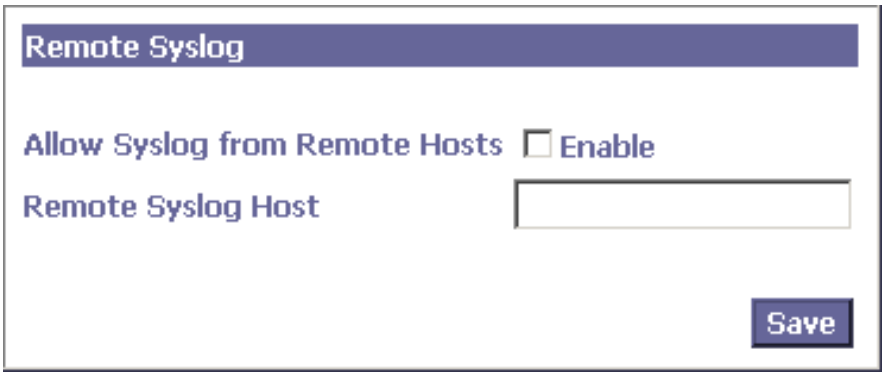


Figure 85 Remote Syslog

COSMOS Notification System

The COSMOS Notification System configuration menu is used to set up how the COSMOS Appliance transmit system messages.

COSMOS Notification System Table

This table (see Figure 86) shows which plugin will be activated when the COSMOS notification system reaches the selected levels. You can easily change the behavior by selecting a checkbox in the table. Click on the **Save** button to save your configuration.

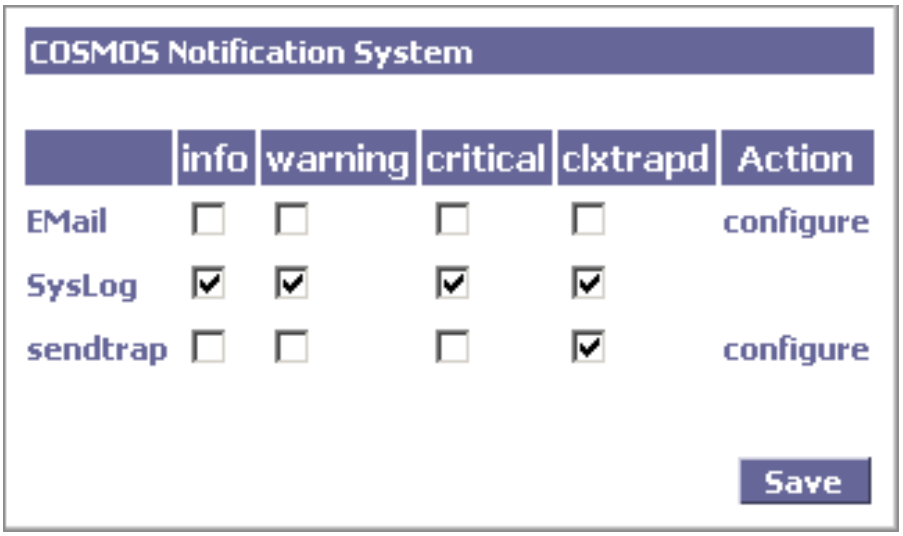


Figure 86 COSMOS Notification System

Note: some notification plugins need to be configured before using. If it is configurable, so you can find in the last column a link to the configuration page for the plugin.

CNS PlugIn Configuration

Each plugin has its own configuration dialog. For example the image (see Figure 87) displays the configuration of the email plugin.

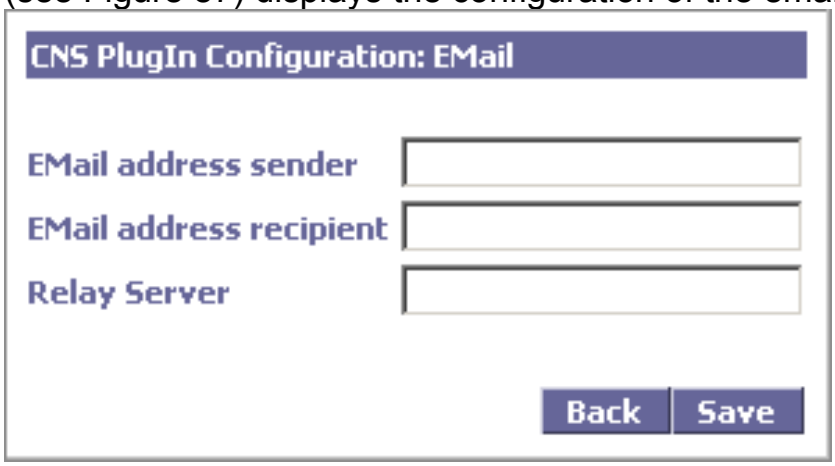


Figure 87 CNS Plugin Configuration

At the top you can see the plugin name inside the title bar. Below there are rows with plugin specific input fields. In the displayed example you can see a text box for an email address and another text box for the relay server. After you have done your inputs click on the **Save** button.

System Backup

The Backup/Restore system is split into three active parts. The backup/restore, file transfer and scheduling of backups. This creates an environment to do immediate backups and restore without having to do file transfers. Experimental changes to a system are a quick and painless task because you can easily do a snapshot backup and restore to a working system. All backups can be transferred directly to your desktop or your ftp server for safekeeping. You can schedule backups to be performed at fixed intervals to ensure that the last system configuration is saved.

Backup

When backup has not been performed yet, the menu will show only three options: to restore a backup from a remote site, schedule a backup or to perform a backup. To download a backup, please refer to the file download sections later in this document

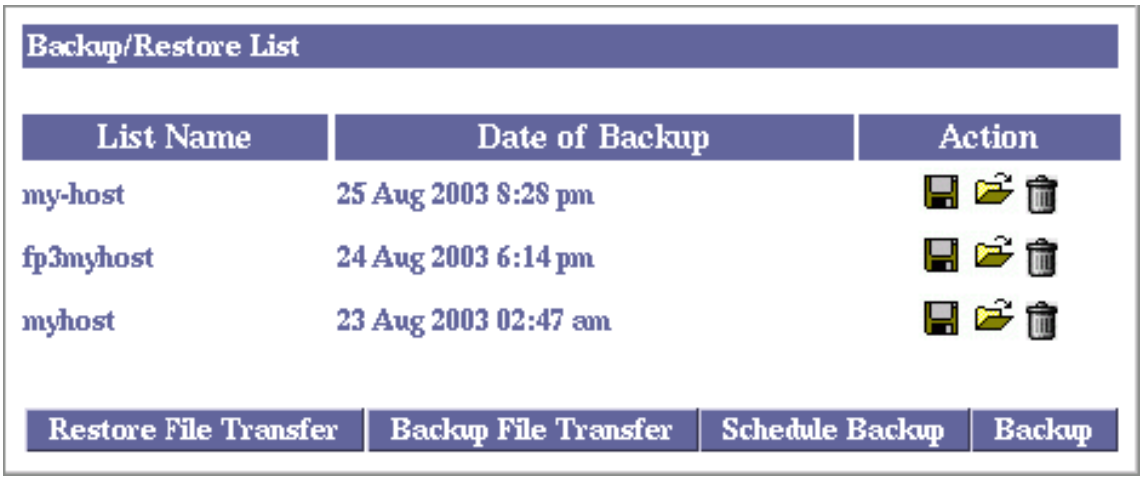


Figure 88 Backup List

When you choose to do a backup, you will be presented with the following menu. This menu allows you to choose which package (that has been installed) to be part of the backup and the allows you to put in comments about this backup.

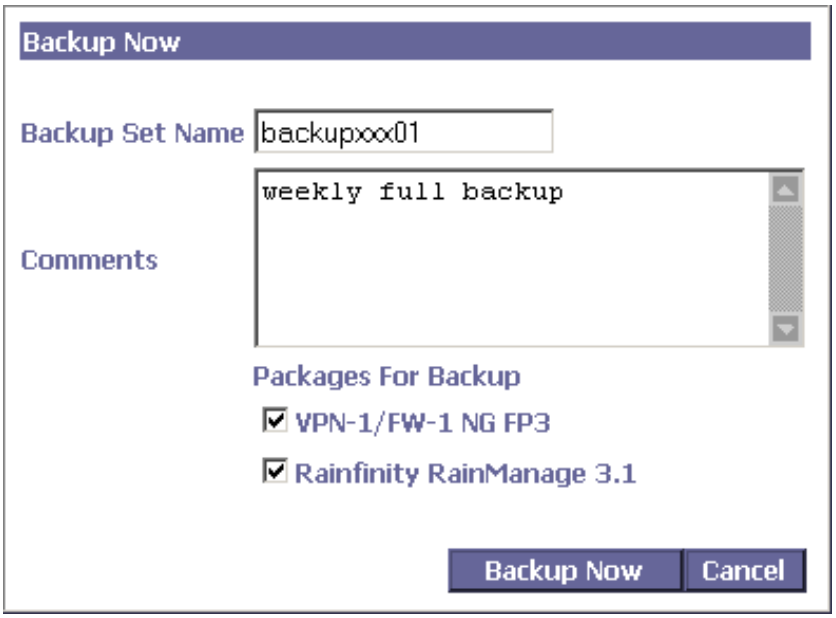


Figure 89 Backup Now

The Backup Set Name is any name that has no spaces in it and it defaults to the system host name.

Figure 90 Backup process running

The backup process shows this screen as it progress.

Once a backup is done, the backup/restore menu will now show the names of the backup with the date and time of the backup. Next to it there are several icons which allows you to save, restore or delete a backup.

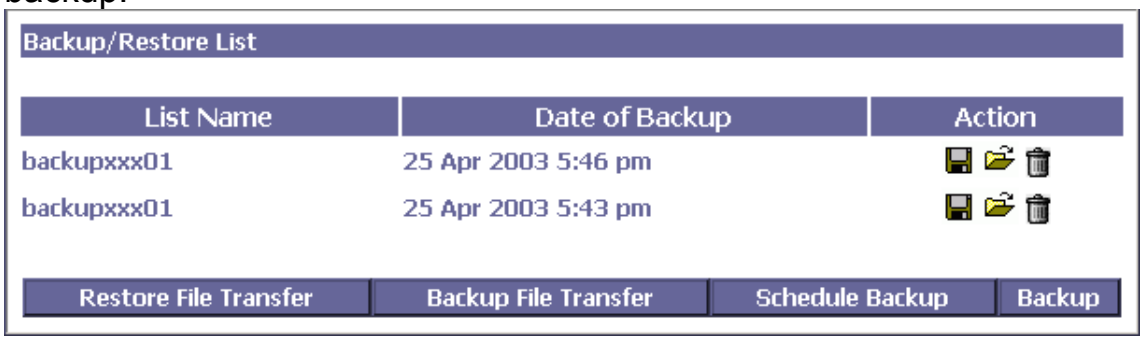


Figure 91 Backup List

This icon represents a save to desktop option

This icon represents a restore option

This icon represents a delete option.

USB Storage

An external USB storage device can be used on the appliance as an alternative backup. After an USB storage (e.g. an USB stick) is attached at your COSMOS Appliance, you will see a few new icons in the backup list. In front of each backup is an icon which shows you where the backup is:

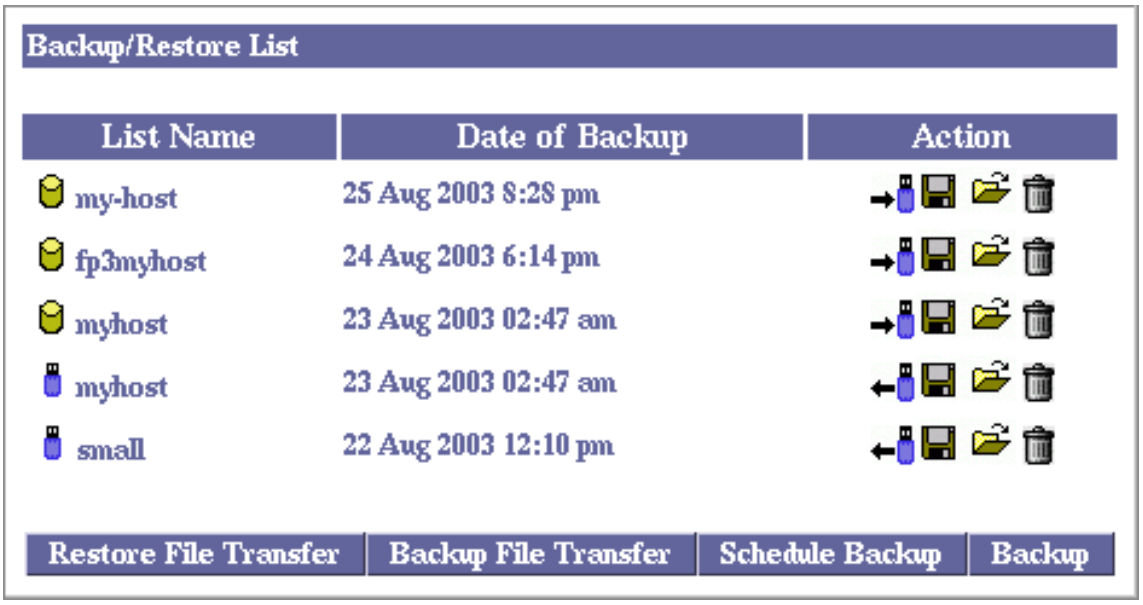


Figure 92. Backup List USB

This icon represents the harddisk location.

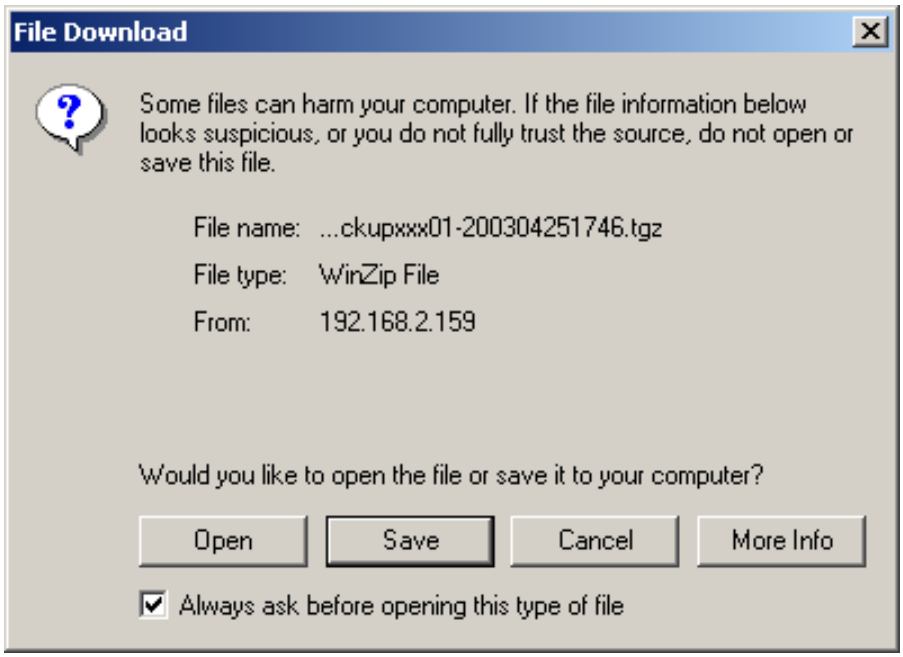
This icon represents the usb-storage location.

Also there is another icon in the action column of the list. This icon allows you to transfer a backup to the usb storage and back to the system.

This icon represents a copy to usb-storage option.

This icon represents a copy from usb-storage option.

When you click on the save icon, you will be asked where to save it on your desktop.


File Download
Some files can harm your computer. If the file information below looks suspicious, or you do not fully trust the source, do not open or save this file.
File name: ...ckupxxx01-200304251746.tgz
File type: WinZip File
From: 192.168.2.159
Would you like to open the file or save it to your computer?
Open
Save
Cancel
More Info
Always ask before opening this type of file
Figure 93 File Download

Restore

If you click on restore option, you will be presented with a menu like the one below.

The way our restore works is that it will determine which packages are in the backup and will try to match with the packages installed in the system. This could mean that some existing packages will be removed and other packages added. This will be displayed before you can actually start a restore. During the restore, the unnecessary packages will be removed, required packages will be added until the system matches the backup configuration.

Figure 94 Restore Details

If you are trying to restore the system from scratch or just trying to transfer existing backups to the system, click on the download option. It gives you an option to transfer files directly from your desktop by browsing to the file then clicking on “Upload file”.

Or you can fill in the ftp particulars and clicking on Retrieve Directory, this will retrieve all files that looks like the backup file format. The backup file format is <backup-set-name>-<Date/time>.tgz

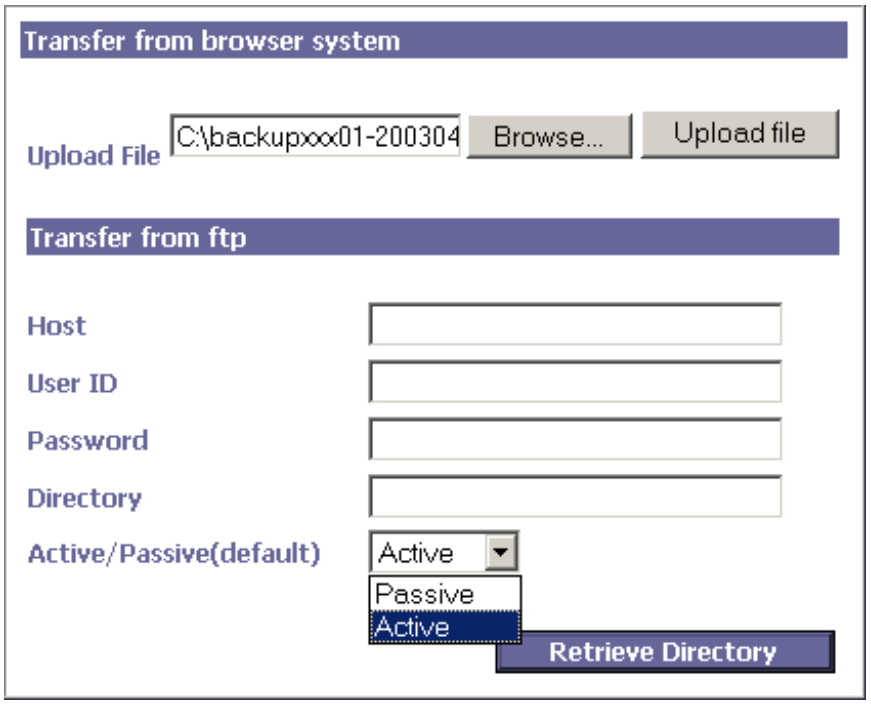


Figure 95 Backup Download

Remember that the active/passive mode of the FTP server is necessary for correct operation.

After that, the menu will show which files you can upload and you can choose to get the files.

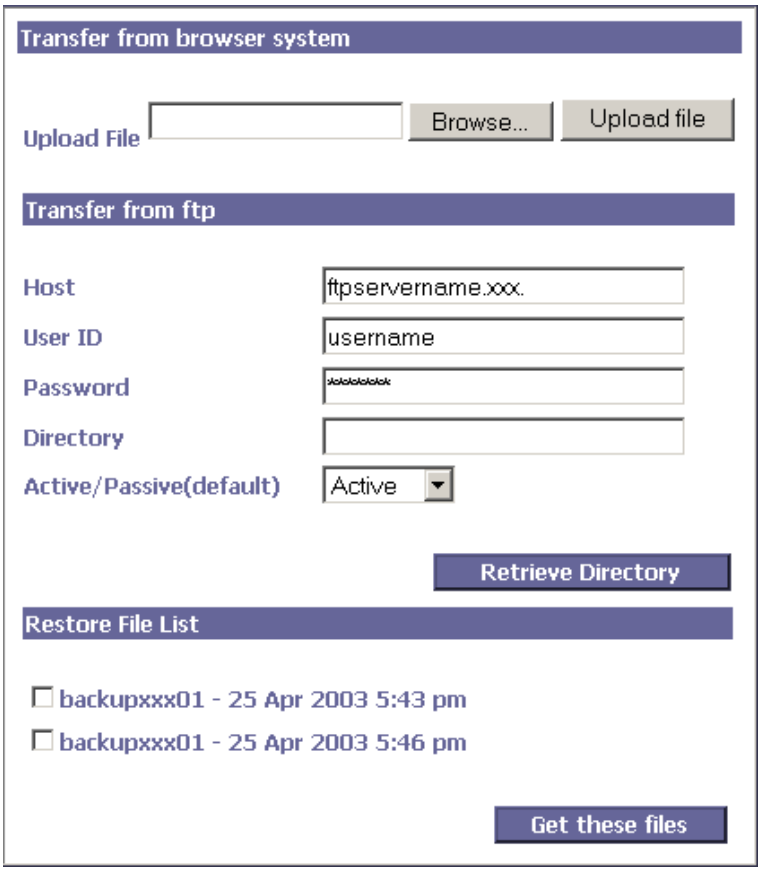


Figure 96 Backup Download

To move the files out of the system, you would click upload, this will give you a similar menu as show below. Except this time, the backup files that are on the system are presented for you to choose to transfer to your ftp server.

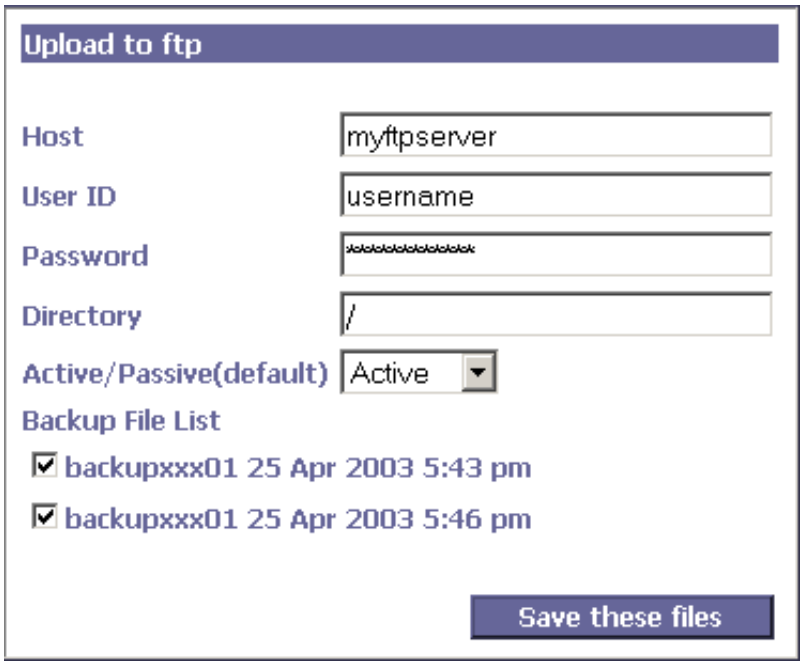
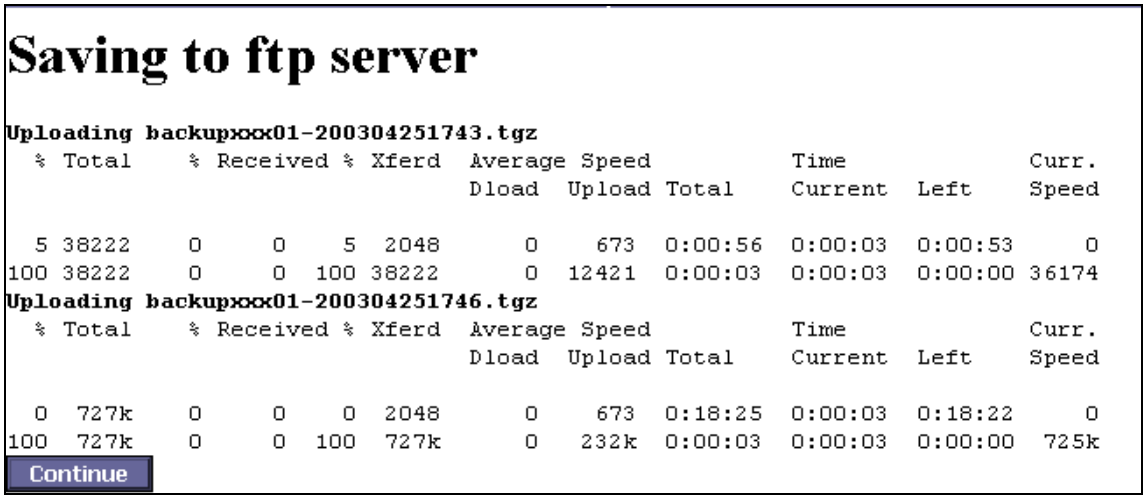


Figure 97 Upload to FTP

Once you click “Save these files”, a new screen shows the ftp process.


Saving to ftp server
Uploading backupxxx01-200304251743.tgz
% Total % Received % Xferd Average Speed Time Curr.
Dload Upload Total Current Left Speed
5 38222 0 0 5 2048 0 673 0:00:56 0:00:03 0:00:53 0
100 38222 0 0 100 38222 0 12421 0:00:03 0:00:03 0:00:00 36174
Uploading backupxxx01-200304251746.tgz
% Total % Received % Xferd Average Speed Time Curr.
Dload Upload Total Current Left Speed
0 727k 0 0 0 2048 0 673 0:18:25 0:00:03 0:18:22 0
100 727k 0 0 100 727k 0 232k 0:00:03 0:00:03 0:00:00 725k
Continue
Figure 98 Saving to FTP server

Now that you have a working system you may want to do periodic backups of your system.

Clicking on Schedule will present a menu, this allows you to specify the backup name and when do you want to backup. You can backup at specific time of the day, or once a week(on a specific day) or once a month (also on a specific day and time).

Note however, that it will use the current ftp settings; this is to ensure that a working ftp server is used for the scheduled backup.

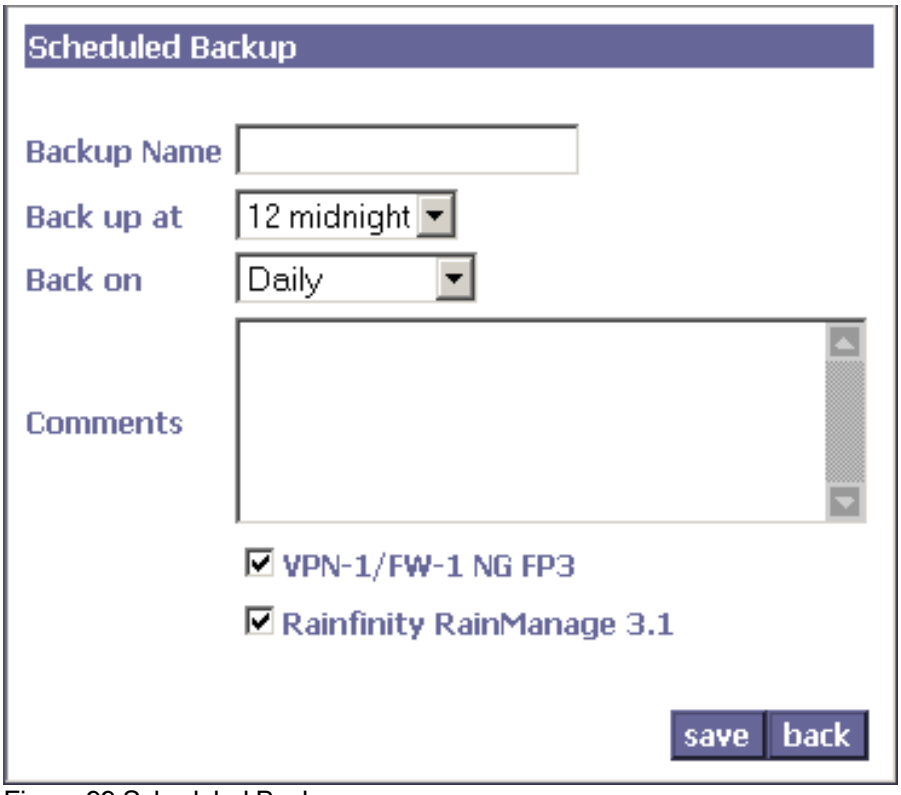


Figure 99 Scheduled Backup

System Update

From time to time, Celestix will release patches for the COSMOS Appliance. These patches help to keep the system up to date as well as free from bugs and security exploits. The patches are available as files that can be downloaded from the Celestix web site.

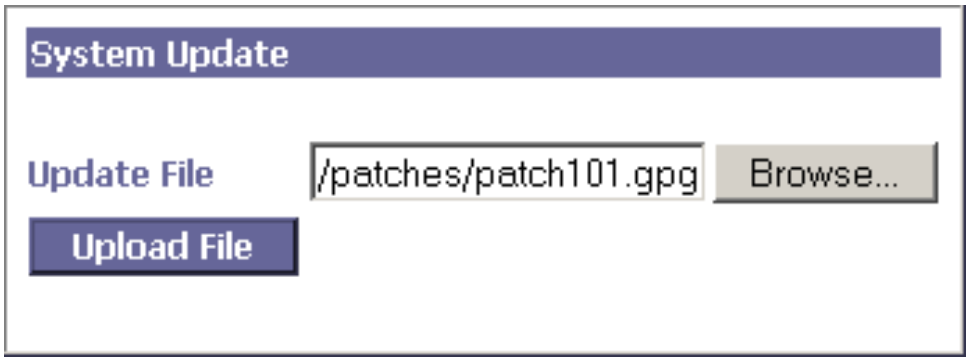


Figure 100 System Update

Click on the **Browse** button and select the patch file. Then click on the **Upload File** button to upload the file to the system.

The system will verify the gpg signature of the patch against the public key from Celestix. If it matches, a confirmation screen will be displayed. Click on the **Confirm Update** button to proceed with the system update.

Auxiliary Serial Port

When the COSMOS Appliance cannot be remotely accessed from the local area network or the Internet, a remote dial-in console can be set up.

Connect a modem to a phone line and connect the serial cable into the serial port at the rear panel of the COSMOS Appliance.

Select either “Disabled” or “Dial-in” from the **Console type** selection box to disable or enable the remote dial-in console respectively.

Select a port speed from the **Port Speed** selection box.

Select the number of rings before the modem answers the call.

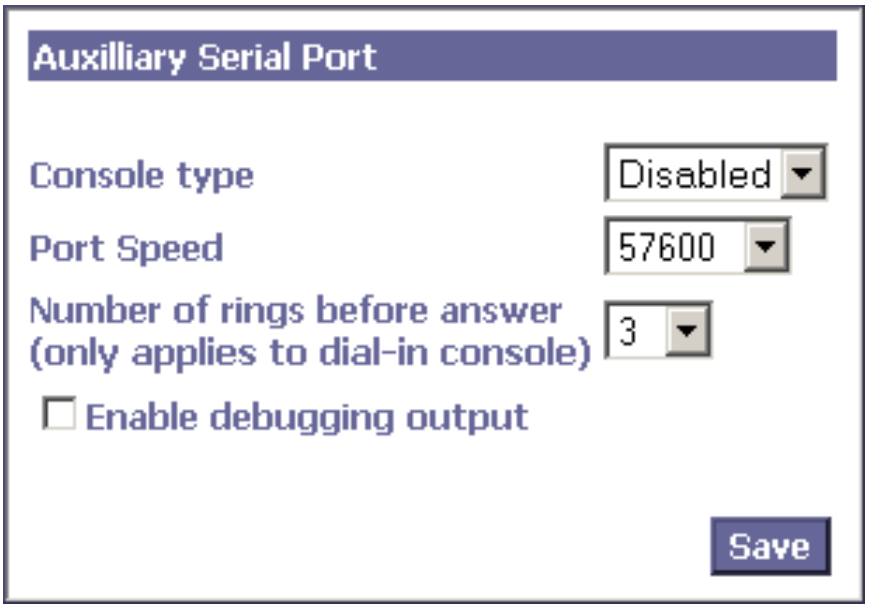


Figure 101 Auxilliary Serial Port

Note: The port speed of your modem should match the Port Speed setting you have configured here.

Select the **Enable debugging output** check box if you encounter problems. View the output log from the **System Log** menu item under the **System Information** menu.

LCD Idle Display

The LCD on the front panel on appliances from Celestix (not available for FV8xx) displays the status of the system when idle. The information displayed can be configured from this menu.

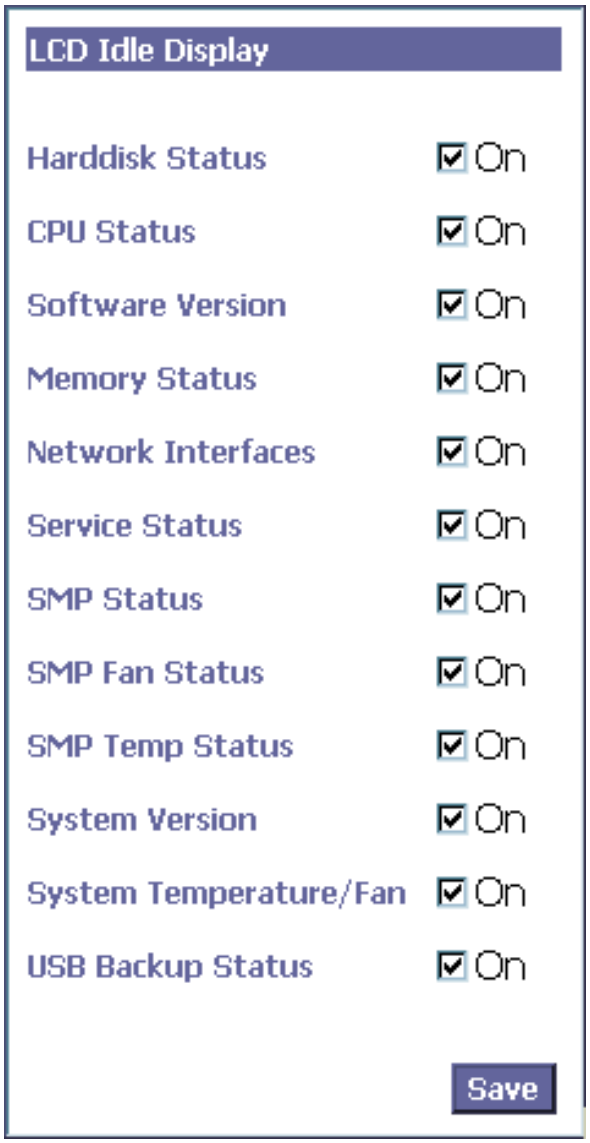


Figure 102 LCD Idle Display

Select the information to display from the respective check boxes. Then click on the **Save** button to save the configuration.

LCD User Interface

Use this menu item to lock the LCD display on the Celestix's server appliance. When locked, the user will be unable to configure system settings using the LCD display.

Select **Normal** to allow users to configure settings through the LCD display. Select **Locked** to disable configuration using the LCD display.

The PIN (not available on FV8xx) is used to set or reset the password for the LCD display to be accessed. Note that you should not use 0000 as your PIN as this is the default value for this PIN.

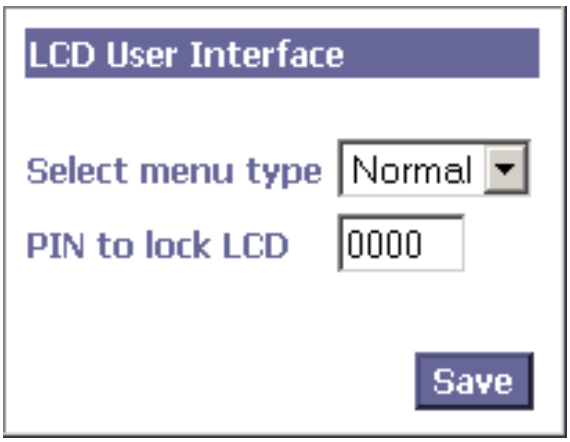


Figure 103 LCD User Interface

Click on the **Save** button to save your settings.

Power Control

Use this menu to shut down or reboot the COSMOS Appliance. The screen will show the current system running time.

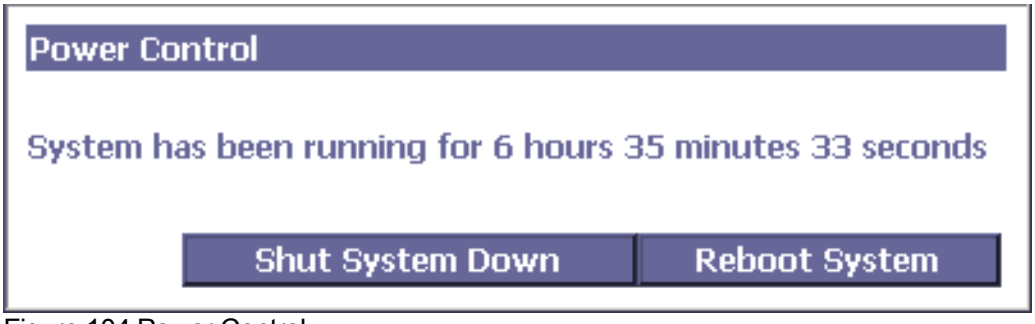


Figure 104 Power Control

Click on the **Shut System Down** button to perform a shutdown on the system. Click on the **Reboot System** button to reboot the system.

In both cases, a confirmation box will appear asking the administrator to confirm the action. Click on the **OK** button to go ahead with the action or the **Cancel** button to abort the action.

Using The Integrated Network Utilities

The integrated network utilities allow you to test your network connection from the COSMOS Appliance without a login on the server.

Ping

This menu allows you to ping a network host to test your network connection.

Enter the fully qualified hostname or the dotted decimal IP address of the host to ping.

IMPORTANT: Ping may not work properly if the firewall is blocking locally generated outgoing icmp-echo-request (ping) or incoming icmp-echo-reply (pong).

Click on the **Start Ping** button to start the ping test.

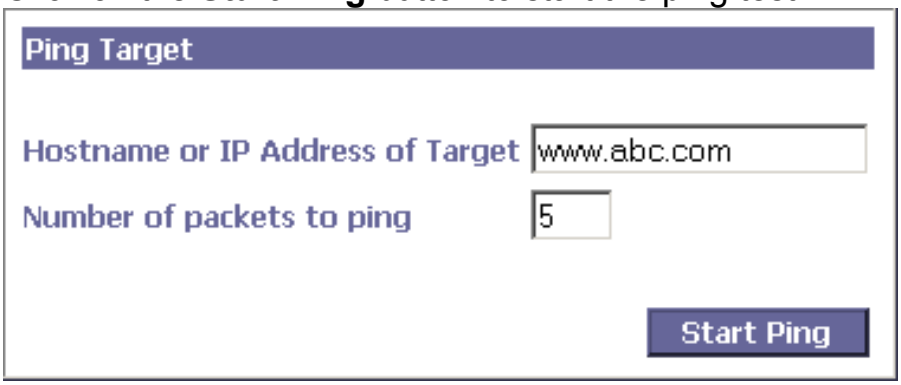


Figure 105 Ping Target

Trace Route

This menu allows you to trace the route to a network host to test your network connection.

Enter the fully qualified hostname or the dotted decimal IP address of the host to traceroute.

Click on **Start Trace Route** to start the network test.

IMPORTANT: You might not see any response from hosts (indicated by an asterisk * in front of the hop number) if the firewall is blocking locally generated outgoing UDP packets, or incoming icmp-time-exceeded packets.

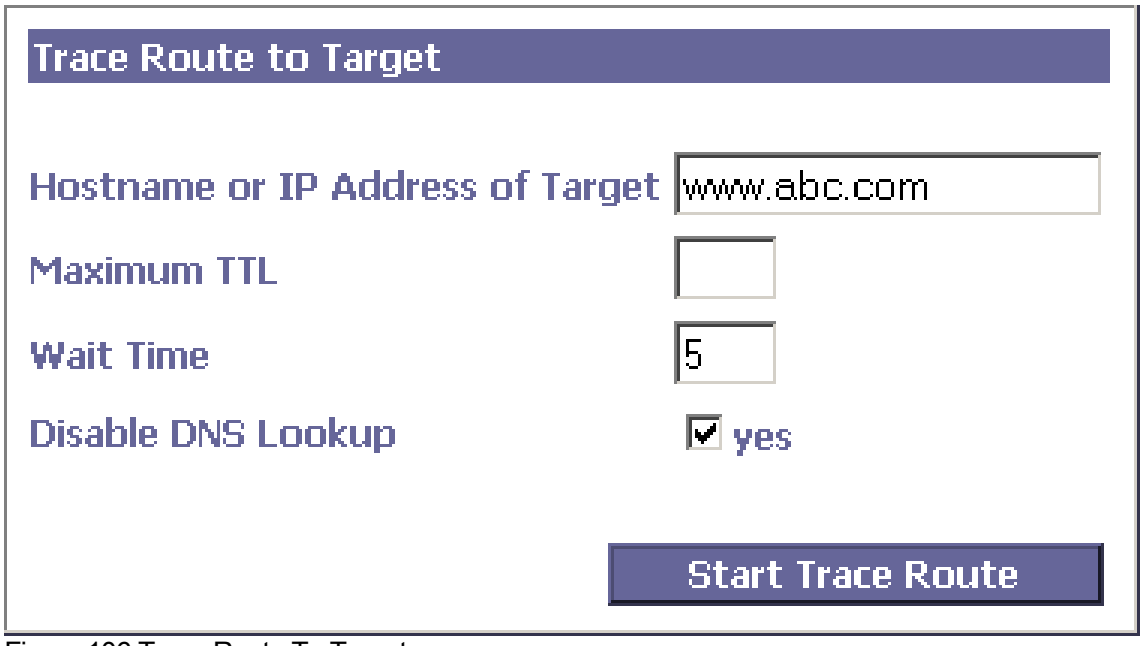


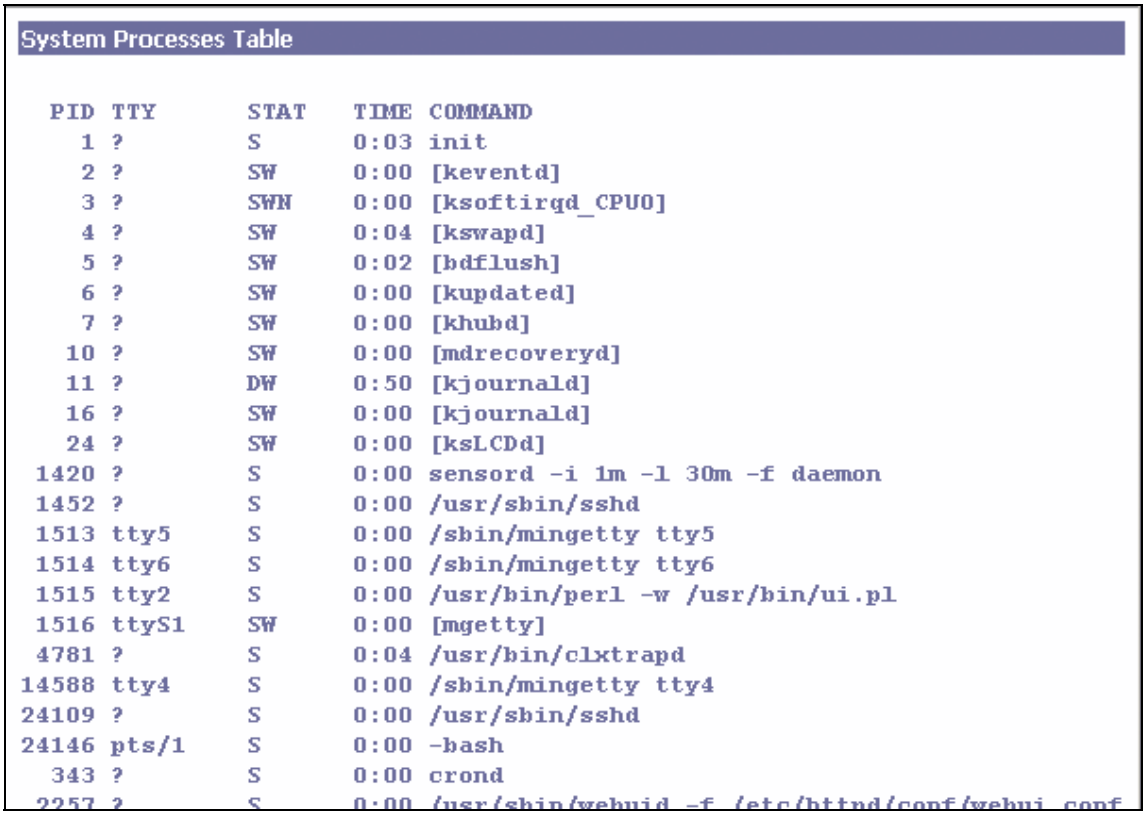
Figure 106 Trace Route To Target

System Information

The System Information menu shows raw system status gathered from the COSMOS Appliance.

System Processes

This menu item displays the processes running on the server, and their status.


System Processes Table
PID TTY STAT TIME COMMAND
1 ? S 0:03 init
2 ? SW 0:00 [keventd]
3 ? SWN 0:00 [ksoftirqd_CPU0]
4 ? SW 0:04 [kswapd]
5 ? SW 0:02 [bdflush]
6 ? SW 0:00 [kupdated]
7 ? SW 0:00 [khubd]
10 ? SW 0:00 [mdrecoveryd]
11 ? DW 0:50 [kjournald]
16 ? SW 0:00 [kjournald]
24 ? SW 0:00 [ksLCDd]
1420 ? S 0:00 sensord -i 1m -l 30m -f daemon
1452 ? S 0:00 /usr/sbin/sshd
1513 tty5 S 0:00 /sbin/mingetty tty5
1514 tty6 S 0:00 /sbin/mingetty tty6
1515 tty2 S 0:00 /usr/bin/perl -w /usr/bin/ui.pl
1516 ttyS1 SW 0:00 [mgetty]
4781 ? S 0:04 /usr/bin/clxtrapd
14588 tty4 S 0:00 /sbin/mingetty tty4
24109 ? S 0:00 /usr/sbin/sshd
24146 pts/1 S 0:00 -bash
343 ? S 0:00 crond
Figure 107 System Process Time

System Logs

This menu item allows you to check the various system logs.Click on the system log name to review it. Remember to check the system logs

whenever something unusual happens. It will help you troubleshoot problems most of the time.

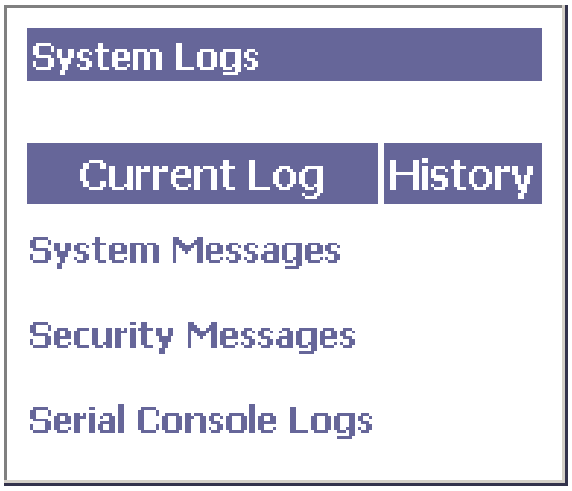
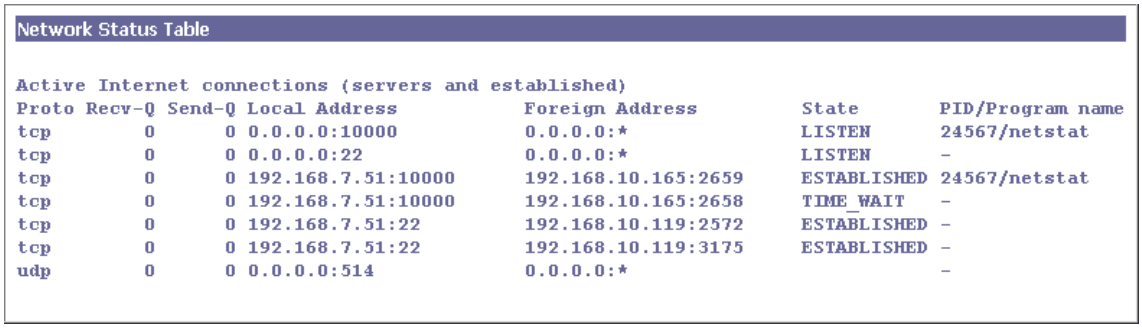


Figure 108 System Logs

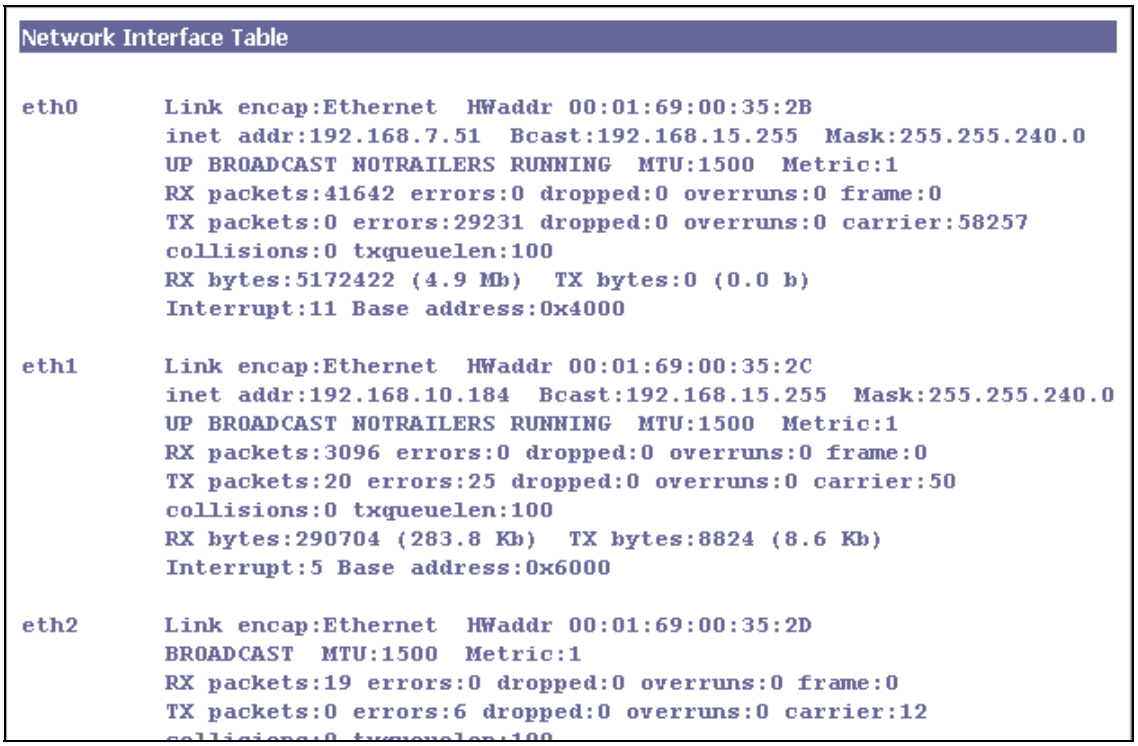
Network Statistics

This menu item shows open connections and open ports on the server. The IP addresses of the connecting systems are also shown.


Network Status Table
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address Foreign Address State PID/Program name
tcp 0 0 0.0.0.0:10000 0.0.0.0:* LISTEN 24567/netstat
tcp 0 0 0.0.0.0:22 0.0.0.0:* LISTEN -
tcp 0 0 192.168.7.51:10000 192.168.10.165:2659 ESTABLISHED 24567/netstat
tcp 0 0 192.168.7.51:10000 192.168.10.165:2658 TIME_WAIT -
tcp 0 0 192.168.7.51:22 192.168.10.119:2572 ESTABLISHED -
tcp 0 0 192.168.7.51:22 192.168.10.119:3175 ESTABLISHED -
udp 0 0 0.0.0.0:514 0.0.0.0:* -
Figure 109 Network Status Table

Network Interfaces

This menu item shows the status of all network interfaces on the server.


Network Interface Table
eth0 Link encap:Ethernet HWaddr 00:01:69:00:35:2B
inet addr:192.168.7.51 Bcast:192.168.15.255 Mask:255.255.240.0
UP BROADCAST NOTRAILERS RUNNING MTU:1500 Metric:1
RX packets:41642 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:29231 dropped:0 overruns:0 carrier:58257
collisions:0 txqueuelen:100
RX bytes:5172422 (4.9 Mb) TX bytes:0 (0.0 b)
Interrupt:11 Base address:0x4000
eth1 Link encap:Ethernet HWaddr 00:01:69:00:35:2C
inet addr:192.168.10.184 Bcast:192.168.15.255 Mask:255.255.240.0
UP BROADCAST NOTRAILERS RUNNING MTU:1500 Metric:1
RX packets:3096 errors:0 dropped:0 overruns:0 frame:0
TX packets:20 errors:25 dropped:0 overruns:0 carrier:50
collisions:0 txqueuelen:100
RX bytes:290704 (283.8 Kb) TX bytes:8824 (8.6 Kb)
Interrupt:5 Base address:0x6000
eth2 Link encap:Ethernet HWaddr 00:01:69:00:35:2D
BROADCAST MTU:1500 Metric:1
RX packets:19 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:6 dropped:0 overruns:0 carrier:12
Figure 110 Network Interfaces

System Up Time

This menu item shows how long the system has been operating. The load average, and the number of users logged into the system are also shown

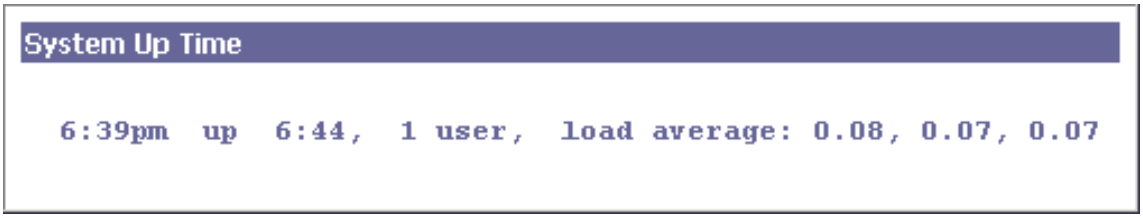


Figure 111 System Up Time

Memory Information

This menu item shows the amount of used and free memory on the server. If no unit is indicated, information is displayed in bytes.

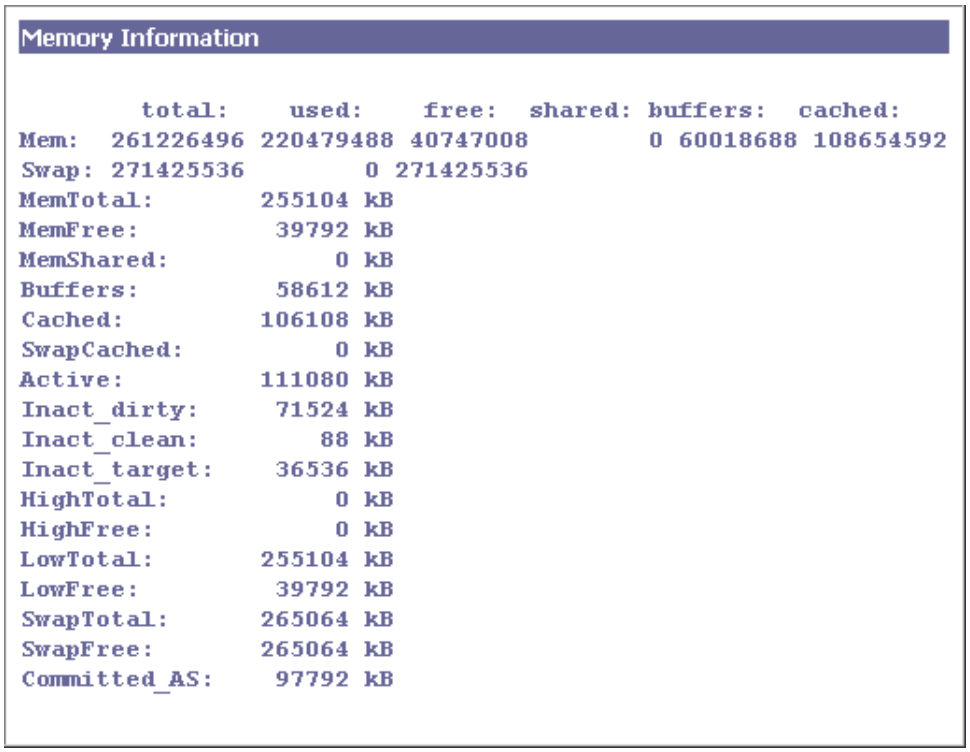
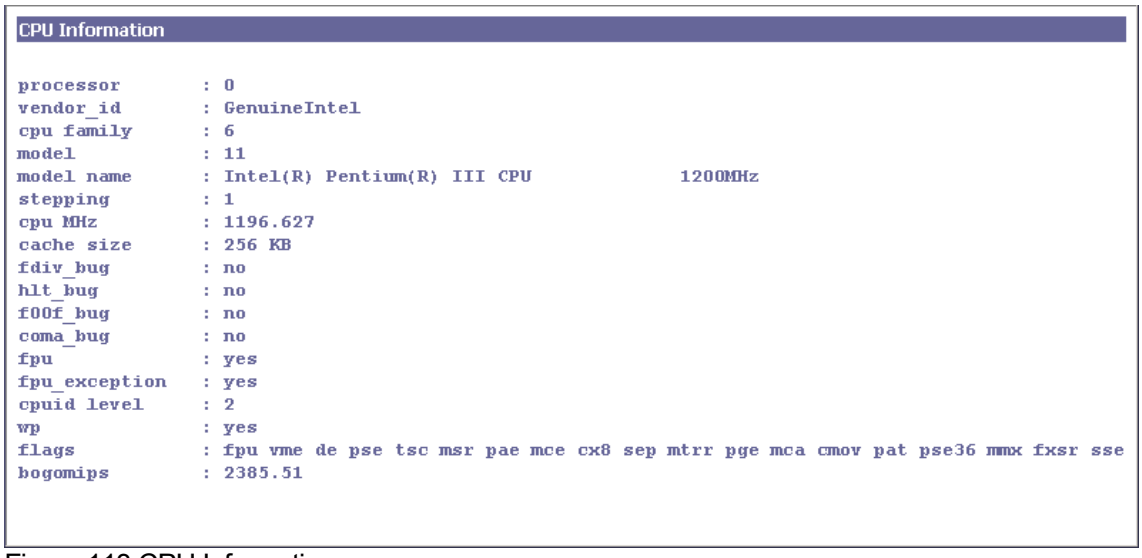


Figure 112 Memory Information

CPU Information

This menu item shows information on the CPU in the server.


CPU Information
processor : 0
vendor_id : GenuineIntel
cpu family : 6
model : 11
model name : Intel(R) Pentium(R) III CPU 1200MHz
stepping : 1
cpu MHz : 1196.627
cache size : 256 KB
fdiv_bug : no
hlt_bug : no
f00f_bug : no
coma_bug : no
fpu : yes
fpu_exception : yes
cpuid level : 2
wp : yes
flags : fpu vme de pse tsc msr pae mce cx8 sep mtrr pge mca cmov pat pse36 mmx fxsr sse
bogomips : 2385.51
Figure 113 CPU Information

Version Information

This menu item shows the system software version, as well as information on the installed software.

Figure 114 Version Information

System Monitoring

System Monitoring provides you the ability to self-monitor the system as well as remote monitoring using SNMP.

Figure 115 System Monitoring Menu

SNMP Control

This menu provides the ability to setup the default access parameters of the SNMPD daemon.

Firstly, it provides a means to start and stop the service and to enable it at boot time.

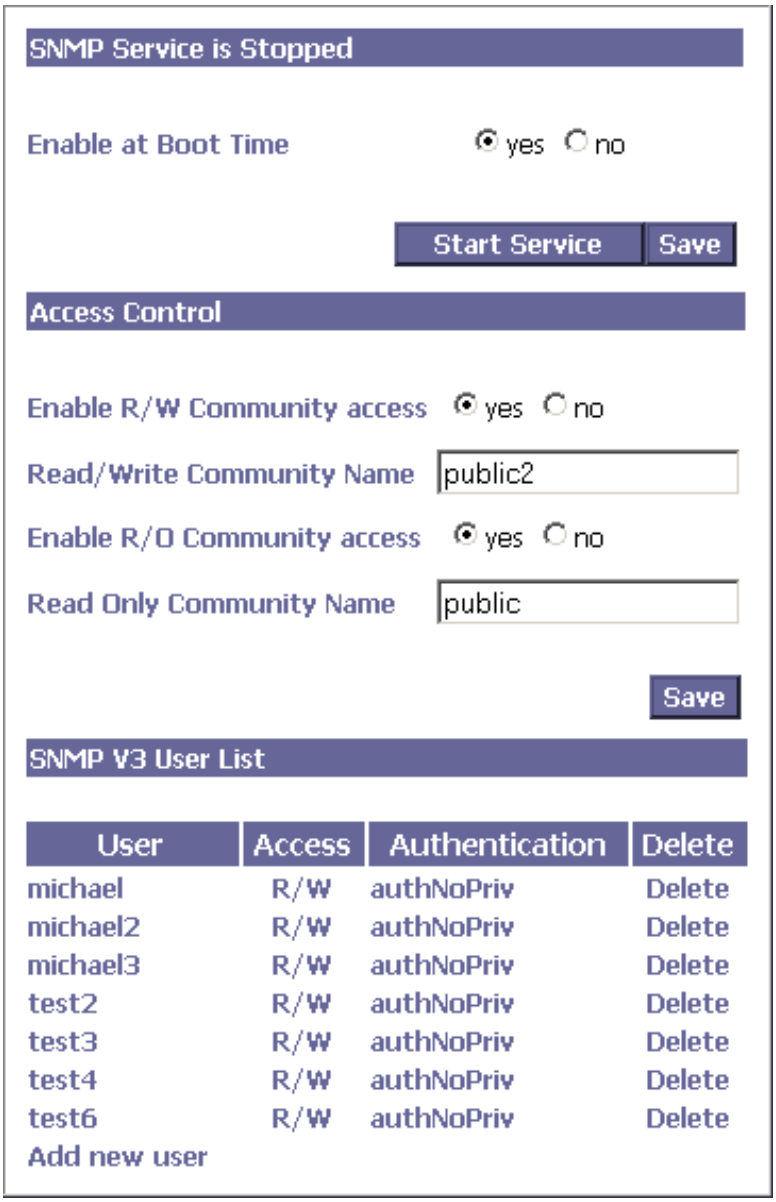


Figure 116 Access Control

By default, only the Read Only community is enabled with a public community string. This is to prevent accidental starting of the service before the Read/Write access community name is properly saved.

Following that, if you have an SNMP v3 server in your premises, you can configure access for individual users when you click the “Add new user” link at the bottom.

When you are setting up a new user, you will be provided with a menu on the left. The user name can be of any length, but the passwords require at least 8 characters in length.

The Access type can be R/O (Read Only) or R/W(Read and Write).

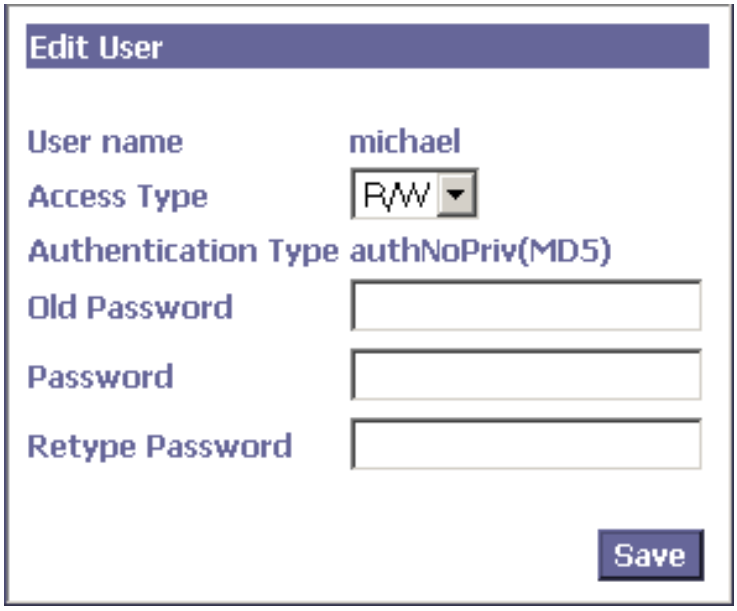


Figure 117 New User Menu

Authentication by default is using MD5 encryption to allow connection to the service.

SNMP System Information

SNMP System Information is to setup where this server is located and who the administrator is.

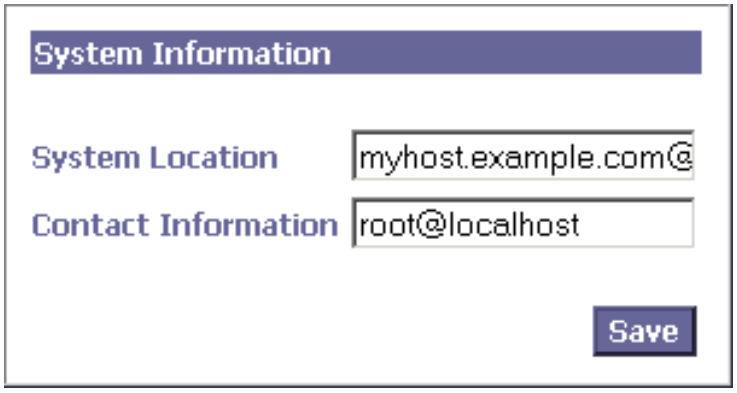


Figure 118 System Information

Traps Control

Traps control allows you start and stop the service to send traps to other SNMP servers. This is to inform them of critical status of the system.

Hosts are simply IP numbers of a specific SNMP server in your network. The community name is usually optional, but Celestix has decided that it becomes a requirement since it would make your other SNMP server vulnerable to attack without community names.

The traps are defined as follows:

Coldstart trap: This trap indicates when a system is booted and a trap is sent to inform the server of this.

Link Up/Link Down: This trap is sent whenever a link comes up or down. This is important for the knowledge if a router or hub/switch has failed.

Low Harddisk space: This trap is sent whenever the harddisk has reached 80% used capacity.

No Harddisk space: This trap is sent whenever the harddisk has reached 98% used capacity.

High Temperature: This trap is sent when any of the various temperature sensors has crossed a preset threshold. If the temperature is too high this trap is sent followed immediately by a shutdown trap and the system will be shutdown to protect the CPU.

Low Fan speed: When a fan is spinning to slow, it indicates a potential fan failure, this trap is sent when the spin rate falls below a fixed amount.

Shutdown notification trap: This sends a trap when the monitoring process shutdown.

CPU Load Traps: This is a load indicator that if the load exceeds a certain value for a time beyond 1,5 or 15 minutes a trap is set.

Process Traps: By default, SSHd, WebUI and SNMP processes are listed. As you add more packages more processes can be monitored.

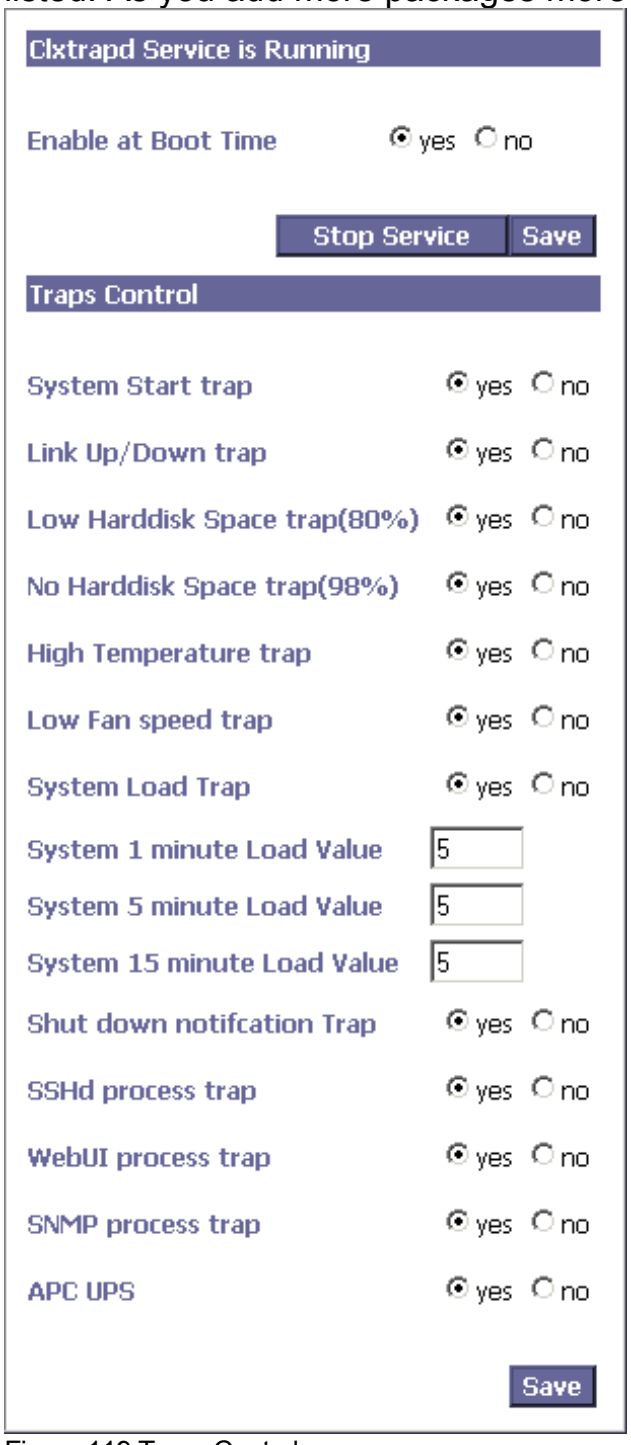


Figure 119 Traps Control

SNMP Trap List

Provides a list of trap destinations with the associated community string. This page shows the trap destination IP, which level of SNMP version and the community string. You can add new trap destination or delete them here.

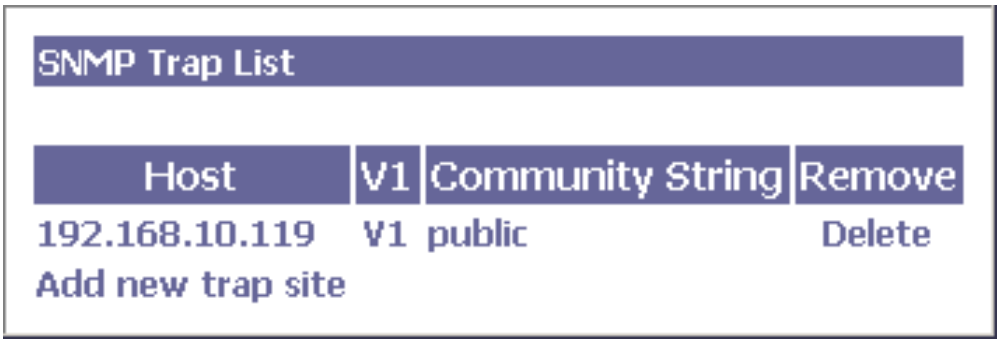


Figure 120 SNMP Trap List

To add trap destination, click on the "Add new trap site" and you will be presented with a menu that provides three fields to fill in:

1. The trap destination as an IP number.
2. The level of authentication.
3. The community string.

When the trap daemon is restarted, it will use the list of sites to send traps to.

Configuration From Command Line Interface

There are two ways to obtain a command-line interface on the COSMOS Appliance. Both methods make use of software freely available on the Windows platform or from the Internet. Serial console login requires the use of a null-modem serial cable.

> **Note: The COSMOS Appliance will automatically logout any command-line session that has been idle for more than 5 minutes.**

Local Login Using The Serial Console

The administrator can log on to the COSMOS Appliance using the serial port on the Front Panel, using a null-modem serial cable connected to a PC or laptop.

This section describes setting up HyperTerminal to connect to the COSMOS Appliance, allowing the administrator to configure the server through a serial console.

Attach a null-modem cable from the serial port on the Front Panel of the COSMOS Appliance to a PC or laptop computer.

Start HyperTerminal on the PC or laptop, and select **New Connection** from the **File** menu.

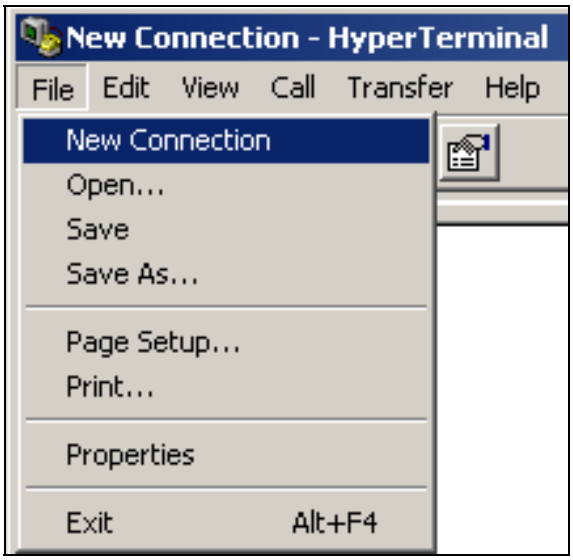


Figure 121 HyperTerminal Connection

Enter a name and choose an icon for the connection, and click **Ok**.

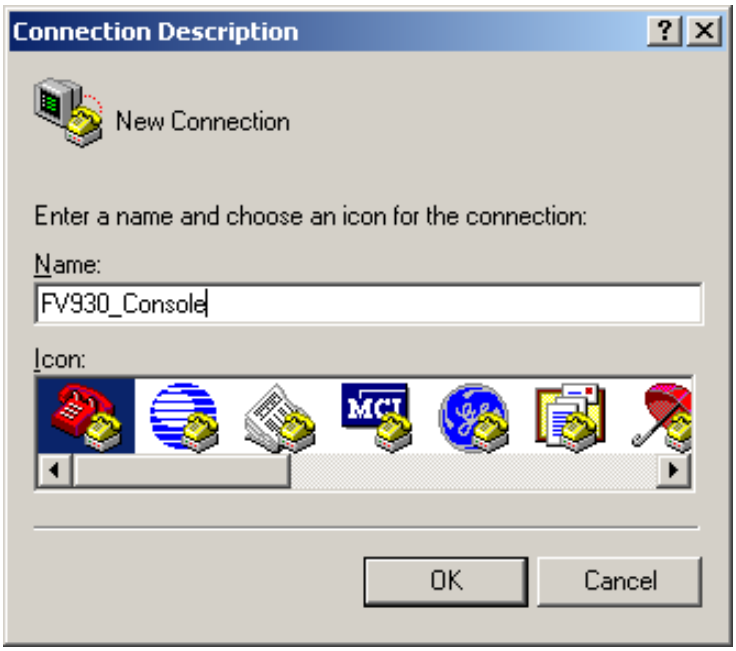


Figure 122 Enter connection name and select icon

Select **Direct to Com1** in the **Connect using** drop-down menu, and click **Ok**. If you are using a different serial port, select the correct option in the drop-down menu instead.

Figure 123 Serial Connection Setting

Select **9600** for the **Bits per second** drop-down menu for the **COM Properties** dialog. The other settings can be left alone. Click **Ok** to confirm your settings.

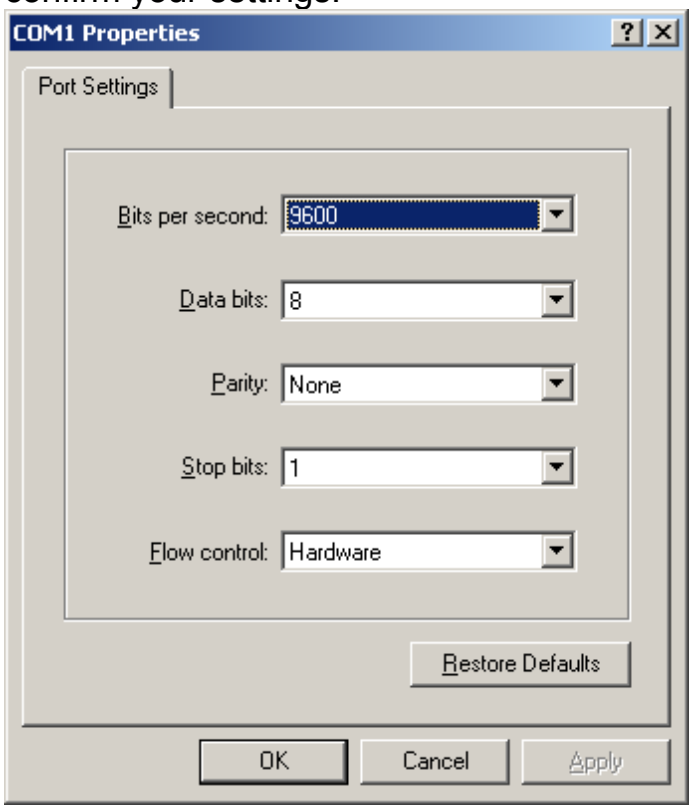


Figure 124 Serial Connection Port Setting

HyperTerminal will connect to the COSMOS Appliance automatically. Press the **Enter** key a few times so that the login prompt appears.

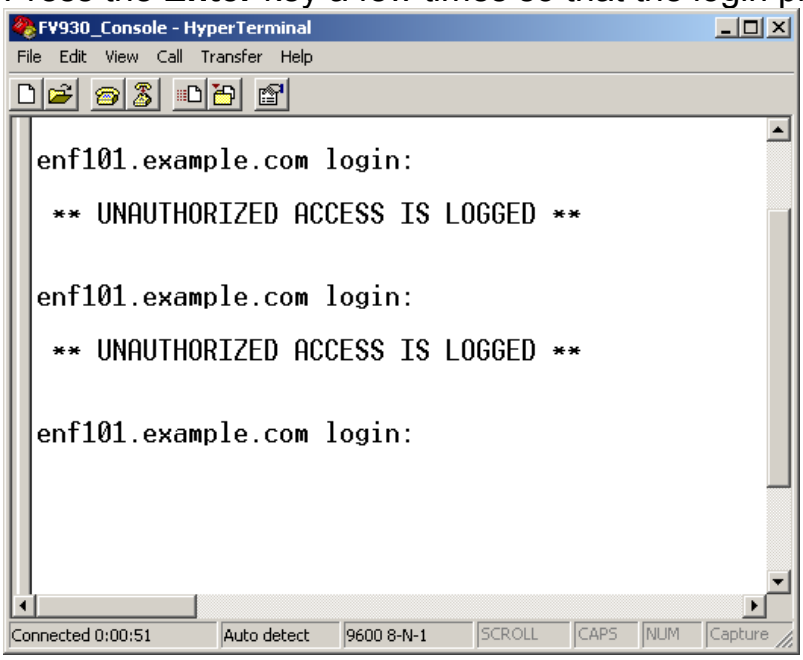


Figure 125 Login throught serial cable

Use the username and password set during initial configuration (see the section Step 1. Set Up User Name And Password on page 3.) to log in to the server.

You can now proceed to configure the server using the command line interface.

Remote Login Using Secure Shell Services

This section describes setting up PuTTY to communicate with the COSMOS Appliance using the Secure Shell protocol.

PuTTY is a free implementation of Telnet and SSH for Win32 platforms. It can be downloaded from:

http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html.

Once downloaded, the binary can be executed immediately. There is no need to install the program.

To connect to the COSMOS Appliance, start the PuTTY program and enter the IP address of the server into the **Host Name (or IP address)** field of the **PuTTY Configuration** dialog box.

For example, if the IP address of the COSMOS Appliance is 192.168.5.50, the configuration will be similar to the following:

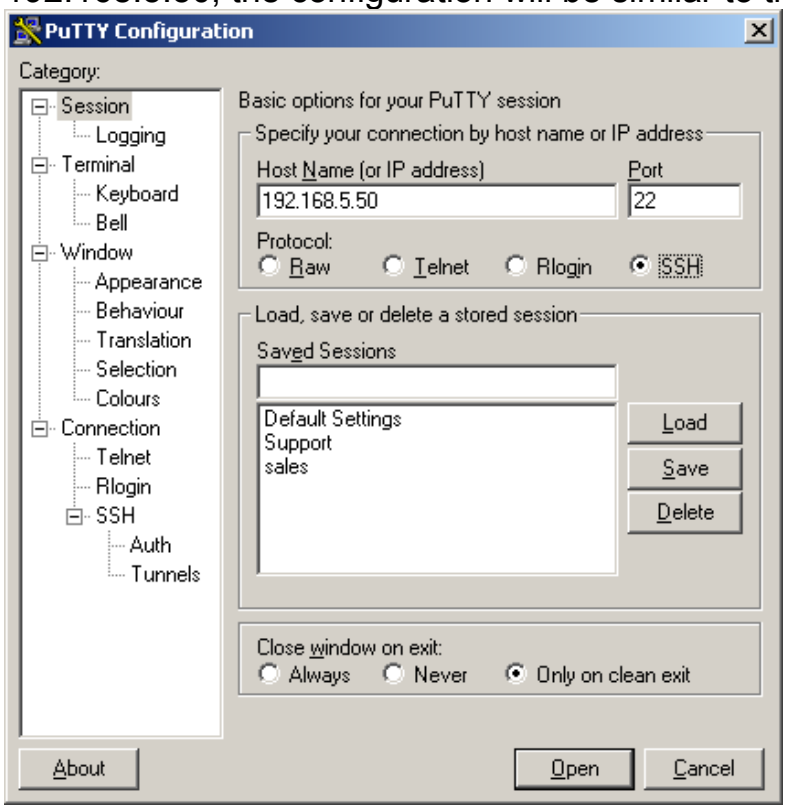
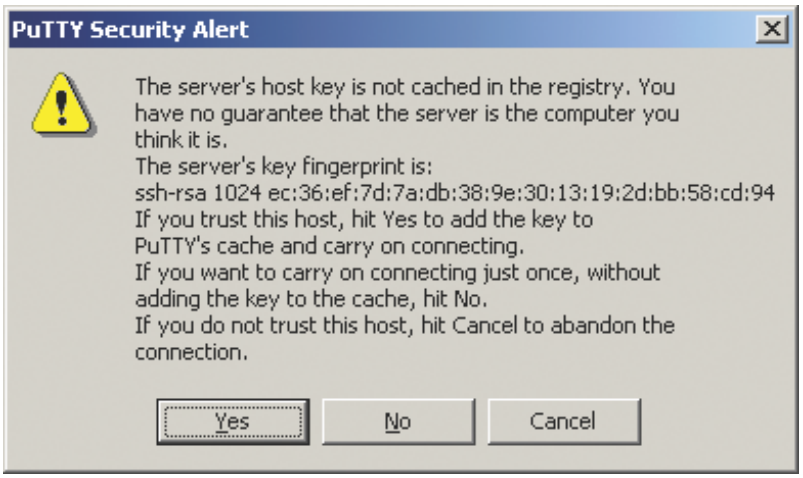


Figure 126 PuTTY Configuration

Select the **SSH** protocol and click on the **Open** button to connect to the server.

If you are connecting to the COSMOS Appliance with PuTTY for the first time, a **PuTTY Security Alert** window wll appear. Click the **Yes** button to store the host key of the COSMOS Appliance locally.


PuTTY Security Alert
The server's host key is not cached in the registry. You have no guarantee that the server is the computer you think it is.
The server's key fingerprint is:
ssh-rsa 1024 ec:36:ef:7d:7a:db:38:9e:30:13:19:2d:bb:58:cd:94
If you trust this host, hit Yes to add the key to PuTTY's cache and carry on connecting.
If you want to carry on connecting just once, without adding the key to the cache, hit No.
If you do not trust this host, hit Cancel to abandon the connection.
Yes
No
Cancel
Figure 127 PuTTY Security Alert

The server will prompt you for a username and password. Use the username and password set up during initial configuration (see the section Step 1. Set Up User Name And Password on page 3) to log in to the server.

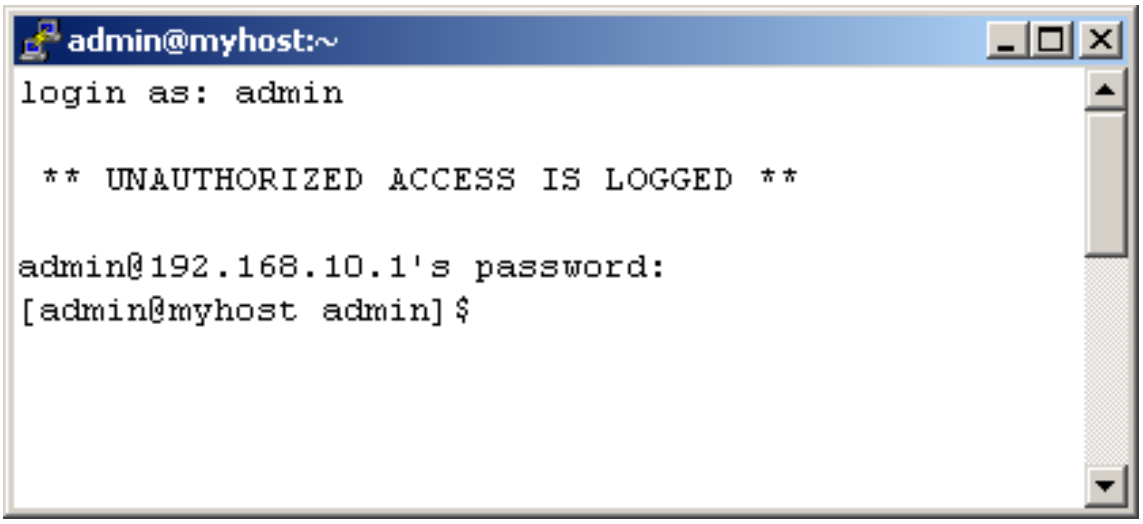


Figure 128 Console Login

You can now proceed to configure the server using the command-line interface.

International Support

Your COSMOS Appliance server is backed by a warranty that provides security and peace of mind. Our worldwide service centers are ready to lend a helping hand.

If the country you are in does not have a Celestix-authorized service site, you can contact us by email at support@us.celestix.com, or by phone at the following numbers:

America: +1-510-668-0700
Asia: +65-6844-1301
Europe: +49-231-545-2500

You can contact Celestix support for issues related to hardware, or basic system problems. Should you find any security problems with the COSMOS Appliance, please contact our security team at security@celestix.com .

Troubleshooting – Frequently Asked Questions

Q. Why can't I connect to the web user interface on port 10000?

A: Check that:

- The network cable is properly connected.
- The IP address or hostname used is correct.
- Web UI is bound to the correct IP address. You can check this in the System Settings -> Web UI screen.
- If you are using SSL (which is the default setting), make sure your URLs start with 'https://' instead of 'http://'.
- The firewall policy installed does not block HTTP or HTTPS traffic to the server itself.

Q: I forgot my root password, how can I reset it?

A: There is no way to reset your root password without resetting to factory defaults and destroying all data. To reset to factory default, please refer to the section Appendix A – Resetting Server To Factory Defaults on page 101.

Q: Why did the SSH host keys change after a "reset to factory state"?

A: The server will regenerate SSH public and private host keys when it is reset. This is to ensure that the host keys are unique for each server.

Q: I get the error message 'An I/O error occurred during security authorization. Please try your connection again', or an 'SSL error' when connecting to the Web UI.

A: During system preparation, a new SSL certificate will be generated for the web server. Your browser may reject connections to the same website because it uses a new certificate. You can restart your web browser to get it to recognize the new certificate.

Q: Can I set a BIOS password on the COSMOS Appliance?

A: It is possible to set a BIOS password on the appliance. Connect a monitor and keyboard to the appliance, and turn on the server. When the appliance is doing a memory check, press the **Del** key to enter BIOS configuration. Choose the **Set Supervisor password** option to configure the BIOS password for the appliance.

Q: After changing the COSMOS system settings throught the browser, I cannot login to the COSMOS web user interface.

A: This usually happens when the system settings is mis-configured. To reset the system settings to its default state:

1. Start a SSH session to connect to the COSMOS Appliance (see Remote Login Using Secure Shell Services on page 95).
2. Login as user admin.
3. Type “su –“ to login as root.
4. Type “/usr/sbin/webuid_reset” to run the script that will restore the system settings.

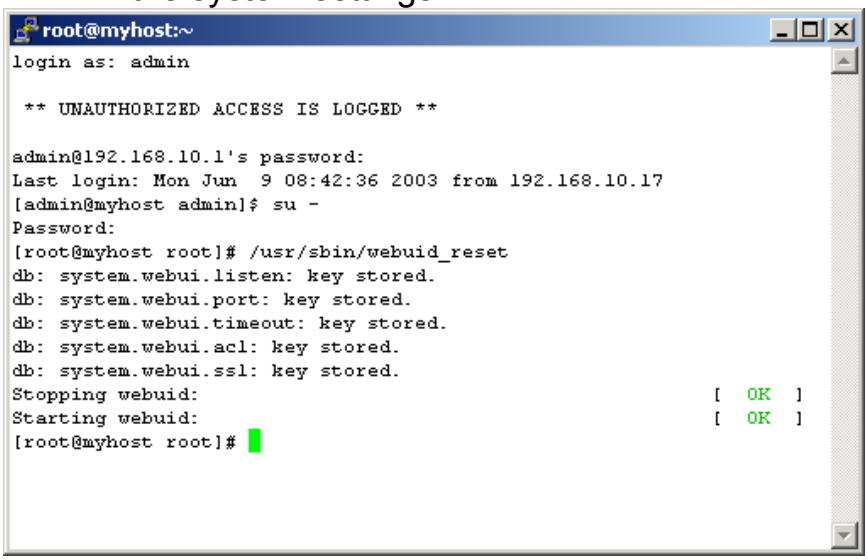


Figure 129 Reset WebUI configuration

Appendix A – Resetting Server To Factory Defaults

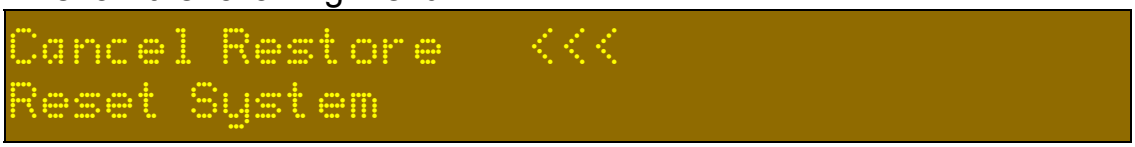
The COSMOS Appliance can be reset to a factory default state. Only someone who has physical access to the server can reset it to the factory default state.

The following instructions will reset the appliance to the factory default state.

Reboot the server through the LCD menu, or from the command-line. The LCD display will show the **System On** message, and the system will beep once for system startup.

The LCD display will then show the **System Ready** message, and the system will beep again. On this second beep, turn the LCD knob clockwise a few times.

The system will then boot into rescue mode, and the LCD display will show the following menu:



Turn the LCD knob to move the pointer, and press the LCD knob to select the option. If the **Restore System to Factory Default** option is selected, the hard disk on the server will be formatted, and a new, factory default image will be installed. If the **Reboot System without restoring** option is selected, the system will reboot without performing a restore operation.

IMPORTANT: The restore operation will destroy all data on the COSMOS hard disk. If you have any important data stored on the appliance, do a backup of the data before resetting the system to factory defaults.